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19 August 1977

U S S R

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS
BIOMEDICAL AND BEHAVIORAL SCIENCES
No. 76

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS
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No. 76

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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Agrotechnology

USSR

UDC 631.821

RESULTS OF SCIENTIFIC STUDIES ON LIMING OF ACID SOILS IN THE USSR IN THE YEARS 1971-1974 AND BASIC TASKS IN THE CURRENT FIVE-YEAR PLAN

Moscow AGROKHIMIYA in Russian No 1, Jan 77 signed to press 27 Feb 76
pp 147-156

SHIL'NIKOV, I. A. and STREL'NIKOV, V. N.

[Abstract] Liming of acid soils is a key link in the general program for accelerated development of agricultural production in the USSR. It is particularly important in the non-chernozem zone where acid soils predominant. The decisions of the CC CPSU and of the Council of Ministers USSR provide for liming on 23 million hectares in 1976 to 1980. Soil liming did increase, from 1965 to 1974, from 2.9 to 5.9 million hectares; lime fertilizer quality improved, and higher doses were used. Yield content favorably responded to liming but studies have shown that, due to unfavorable acid soil, the USSR yearly fails to get 17-18 million tons less of agricultural products than it could. Efforts to establish an appropriate liming program and some kind of balance between cost of liming and yield return have been difficult (US experience is cited here: Voss, et al., Iowa State, 1965). Problems addressed have been: how much lime to use, what method of application and adaptation of liming method to soil structure; technique of pH-measurement; lysimetric study of calcium balance; imbalance of minerals due to fertilization; losses from water filtration; chemical form of lime best suited for uptake by soil; efficacy of combined application of lime and mineral fertilizers. Liming in the non-chernozem zones of the USSR is rapidly growing; application is made in winter on the snow. In Khaborskiy Kray, liming is not done in the winter because winds take away the snow. Research institutes engaged in liming studies include the All-Union Scientific Research Institute of Fertilizers and Soil Science, the Lithuanian and the Belorussian Scientific Research Institutes of Agriculture, the Estonian Agricultural Academy, and other institutions (cited by Shil'nikov in Byul. VIUA, 1974, No 21). The article implies that studies in the current Five-Year Plan involve further advances in work underway. Tables 7; References 32: 26 Russian, 6 Western (five of these cite studies in Germany).

INFLUENCE OF THE PHOSPHATE LEVEL OF GREY FOREST SOIL AND OF DEEP CHERNOZEM
ON YIELD AND QUALITY OF WINTER WHEAT AND ON THE EFFECTIVENESS OF FERTILIZERSMoscow AGROKHIMIYA in Russian No 1, Jan 77 signed to press 27 Feb 76 pp
37-43NOSKO, B. S., and GOLUB, I. A., Ukrainian Scientific Research Institute of
Soil Science and Agrochemistry, Kharkov

[Abstract] Many authors believe that residual fertilizer phosphate, not utilized by plants, has a substantial effect on crop yield and on the action of additionally applied fertilizer. Establishment of a quantitative relationship between soil content of labile phosphorus, crop yield, and action of fertilizers will permit prognostication of their effectiveness, by such a chemical analysis of the soil; it will define the optimal levels of saturation of the soil with phosphorus whereby enough phosphorus can be added to balance its removal in the crop. In this report the authors report pertinent studies undertaken, 1972-1975, on grey forest soil of the Kolkhos imeni Lenin of Tyvrovskiy Rayon and on thick chernozem of the Rossiya Kolkhoz of Lepovetskiy Rayon, Vinnitskaya Oblast. Increase of soil labile phosphorus due to fertilizer phosphorus residues, from 5-6 to 13-16 mg P₂O₅ per 100 g of soil increased the yield of winter wheat on the grey forest soil by 9.9 centners, and on the chernozem soil by 5.5 centners per hectare. When the phosphorus content was more than 13-16 mg per 100 g of soil the application of double or triple doses of phosphorus in an N₆₀P₆₀ regimen does not increase the winter wheat yield, as compared to the effect of a single dose. The largest supplement of crop yield on soils with increased phosphorus levels is gotten on fertilizer variants with application of a double dose of nitrogen. The level of reserves of labile phosphorus has no substantial effect on the content of nitrogen, phosphorus, or potassium in the grain and straw of the winter wheat. The mineral fertilizers in single dose increased the content of nutrient elements in the grain and straw. An increase in soil content of phosphorus promotes increase in weight of 1000 kernels of grain and in glassiness and does not influence the content of protein and of crude gluten. Tables 5; References: 11 Russian.

USSR

UDC: 633.15

STUDY OF TWO-EAR PLANTS PRODUCED BY HYBRIDIZATION OF CORN

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 14-18

SOKOLOV, B. P., academician, All-Union Academy of Agricultural Sciences, Hero Socialist Labor, DZYUBETSKIY, B. V., candidate of agricultural sciences, and KOSTYUCHENKO, V. I., All-Union Scientific Research Institute for Corn

[Abstract] Considering the value of the production of two ears for corn plants, the authors studied its heredity and peculiarities of appearance under various environmental conditions. The material used in the study included 110 lines selected from the collection of the Corn Institute. In all, 624 hybrids were studied. It was found that the characteristic of bearing two ears is complex in nature. Both genotype and growing conditions have a great influence on the appearance of this characteristic. Hybrids produced from crossed lines with stable and clearly expressed manifestation of this characteristic are most stable in their ability to produce two ears under various growing conditions. Lines having high combination capacity as to ability to produce two ears but low combination capacity as to total grain yield do not produce high-yield hybrids. They can be produced only using lines which, in addition to high combination capacity as to level of production of two ears, also have high combination capacity as to total level of grain produced. Tables 4; References 11: 8 Russian, 3 Western.

USSR

UDC 636.4+551.577

A SYSTEM OF SOIL TREATMENT AND UTILIZATION OF FALL AND WINTER PRECIPITATION

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 30-35

IL'INSKIY, N. N., candidate of economic sciences, Don Zonal Scientific Research Institute for Agriculture

[Abstract] The climate of Rostov oblast, particularly the eastern portion, is clearly continental. Precipitation varies from 200 to 550 mm/yr, falling primarily in the winter, with August and September being extremely dry. Therefore, accumulation and economical use of soil moisture by crop rotation and proper treatment of the soil are very important. The Institute has developed and recommended a number of effective soil treatment and crop rotation plans for farms in the oblast, several of which are outlined in this article. In the eastern and southern zones, deep plowing of bare fallow is effective, allowing greater accumulation of snow moisture and affording better wintering of seeds. A new method developed by the

Institute consists in that after harvesting summer crops, the soil is immediately plowed to break up the top layer completely, then as bare fallow. However, if the autumn is very dry and the soil does not break up well upon plowing, surface plowing of the soil before planting winter crops is recommended. This allows good breaking of the surface layer, decreasing evaporation, retaining the small but quite necessary quantity of moisture present. Many years' experience at the Institute and tests at collective and state farms have established the high effectiveness of fall plowing of the soil. It significantly increases subsequent harvests and greatly decreases or completely eliminates erosion problems. Tables 7.

USSR

UDC: 598.2/.9+636.085

SCIENTIFIC PRINCIPLES OF STANDARDIZED FEEDING OF POULTRY

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 36-46

SMETNEV, S. I., academician, All-Union Academy of Agricultural Sciences, GRIGOR'YEV, N. G., corresponding member, All-Union Academy of Agricultural Sciences, All-Union Scientific Research Institute for Physiology, Biochemistry and Nutrition of Agricultural Animals, LOBIN, N. V., candidate of agricultural sciences, All-Union Scientific Research and Technological Institute for Poultry Breeding, and KARAVASHENKO, V. F., doctor of agricultural sciences, Ukrainian Scientific Research Institute for Poultry Breeding

[Abstract] Scientists both in the Soviet Union and abroad have long studied and improved standardized feeding of poultry, and today there is extensive experimental and practical material available, summarization of which has formed the basis of the system of standardized feeding and evaluation of the nutritional value of feeds for poultry suggested in this article. A brief history is presented of the development of poultry feeding standards in the USSR. The suggested standards are presented in the form of a table listing the chemical components of the feed in percentages of the total combined feed for numerous varieties of poultry. Table 1; References 34: 31 Russian, 3 Western.

USSR

UDC: 628.8+636/639

NORMS FOR CLIMATIC CONDITIONS IN ROOMS FOR INTENSIVE FEEDING OF CATTLE

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 46-51

MARKOV, Yu. M., candidate of veterinary sciences and DUSHKO, N. I.,
Ukrainian Experimental Veterinary Scientific Research Institute

[Abstract] Theoretical calculations of heat and moisture balances, comparative zoohygienic and production-economic evaluation of the norms for ambient air conditions and air exchange and the natural climatic conditions of the Ukraine were performed. The method for theoretical calculation of heat and air balance in animal husbandry buildings, particularly including the additional input of moisture evaporated from the animal excreta were confirmed in experiments and allowed more precise and complete observation of the norms for air exchange and environment for cattle on farms with modern commercial technology for the production of animal husbandry products. The temperature should be maintained at 12-16 C, and the rate of air exchange should be somewhat higher than that called for in the applicable norm (NTP-SKh.1-72). This increases productivity, reduces total morbidity and improves weight gain per unit of feed consumed. Air exchange rates are provided by air movement speeds of 0.25-0.3 m/s, maintaining the carbon dioxide concentration at 0.20/oo, ammonia at 0.018 mg/l, total bacterial count $150\text{--}200 \cdot 10^3/\text{m}^3$, maximum $300 \cdot 10^3/\text{m}^3$. Tables 4; References 10: 9 Russian, 1 Eastern European.

USSR

UDC: 63.331.872+63.338.82

PROBLEMS OF SPECIALIZATION AND COOPERATION OF AGRICULTURE IN SIBERIA

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 68-77

BOYEV, V. R., corresponding member of All-Union Academy of Agricultural Sciences

[Abstract] The low level of agricultural production achieved in Siberia to date is one factor holding back the economic growth of the region. Among the organizational and economic measures which can be taken to increase agricultural production and effectiveness of investments is planned intensification in combination with increased specialization, development of cooperation between farms and agricultural-industrial integration. This is reflected in the CC CPSU resolution "On Further Development of Specialization and Concentration of Agricultural Production by Cooperation Among Farms and Agricultural-Industrial Integration." This article describes the influence which this document should have on

agriculture on Siberia. The production of grain must be improved in almost all regions of Siberia, but by different methods and using different grains in the various regions of Siberia. The application of chemistry and modern land reclamation techniques to agriculture must be intensified to take advantage of the large average size of collective and state farms in Siberia. It is stated that many kolkhozes and sovkhozes in Siberia, particularly grain and cattle, vegetable-dairy and meat-dairy farms, by efficient specialization within the farms, without significant investment for acquisition of new equipment, could very rapidly increase the production of grain, milk, meat and other products by 30 to 50%. It is anticipated that within the next 8 to 10 years, the leading commercial branches of agriculture in most administrative regions of Siberia will be concentrated in two or three specialized unions or firms. Examples are given of great successes achieved by modernization, specialization and cooperation among farms in various regions of Siberia. Table 1.

USSR

UDC 631.3

THE PRINCIPLES OF EFFICIENT FUNCTIONING OF THE AGRICULTURAL MACHINERY AND EQUIPMENT POOL

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 92-102

SINYUKOV, M. I., corresponding member of the All-Union Academy of Agricultural Sciences, Moscow Agricultural Academy imeni K. A. Timiryazev

[Abstract] Specialization and concentration of agricultural production on the basis of extensive cooperation, and conversion of agricultural production to an industrial basis have been noted in a resolution by the Central Committee of the Party as the most important trends for further development of agriculture. One of the main conditions required to perform these tasks is the provision of agricultural equipment of the most modern and progressive types for farms. The utilization of agricultural equipment must be increased by both extensive (increasing the number of days of use of equipment) and intensive (increasing the productivity of each hour of use of each machine and attachment) methods. It is pointed out that machines are currently used neither extensively nor intensively. Extensive use can be improved by increasing the number of days, increasing the number of shifts used per day and decreasing down time of machines within shifts, while intensive use of machines can be improved by increasing the speed of movement of machines, efficient arrangement of machine-plus-tractor combinations and efficient organization of production processes utilizing machinery. The introduction of progressive forms of organization of labor and working processes, including work in two shifts, is an important factor required to increase the effectiveness of utilization of existing

equipment. It is pointed out that lessons can be learned from the USA and other countries, where large groups of expensive harvesting machines move from farm to farm at harvest time, harvesting continually over ranges of up to 250-400 or more kilometers. The need for improved maintenance, including the creation of maintenance shops in kolkhozes and sovkhozes, is noted. Trained engineers specializing in the organization of the use of machines and tractors, electrical equipment, in the mechanization of processes of labor at animal husbandry farms and in the repair of machines and equipment, are needed in greater numbers. Kolkhozes and sovkhozes must be supplied with the most modern equipment, with personnel who know how to use the equipment and with the personnel and facilities required to maintain and repair the equipment. Tables 3.

USSR

UDC 631.8.022.3

THE ECONOMIC EFFICIENCY OF FERTILIZERS ACCORDING TO DATA OF PRODUCTION EXPERIMENTS OF THE AGROCHEMICAL SERVICE

Moscow KHIMIYA V SEL'SKOM KHOZYAYSTVE in Russian No 3, 1977 pp 15-18

TOKAREV, V. V., candidate of economic sciences and TEREKHINA, N. M. (TsINAO)

[Abstract] The Agrochemical Service is instituting production experiments on kolkhoz and sovkhoz fields with the best fertilizer norms, with the aim of determining the economic efficiency of fertilizer norms. The experiments are described. Results show that the use of fertilizers is highly profitable in almost all the zones of the nation, but repayment for the fertilizers by the harvest fluctuates greatly with respect to the individual crops and zones. Tables 3.

Table. Economic efficiency of mineral fertilizers applied under grain crops, average for the USSR
(average data for 1969-1977)

Crop	No of experiments	Applied per 1 hectare, kg			Yield from ferti-lized area centner/hectare	Yield increment from ferti-lizers centner/hectare	Repay-ment for 1 kg per yield, kg	Net income, rubles	
		N	P ₂ O ₅	K ₂ O				per 1 hectare	per 1 ruble outlays
Winter rye	82	60	60	50	19.0	5.7	3.4	37.09	1.00
Winter wheat	383	55	55	45	32.4	7.0	4.5	31.02	0.96
Spring wheat	323	45	50	40	22.0	5.1	3.8	26.69	1.15
Oats	84	45	40	50	21.0	3.0	4.4	33.61	1.28
Barley	346	55	50	50	25.2	6.1	3.9	27.13	0.85
Average	1218	50	50	45	25.9	6.1	4.2	29.35	1.00

USSR

UDC 543.055:631.56

PREPARATION OF GRAIN SPECIMENS WITH A FIXED PROTEIN CONTENT

Moscow KHIMIYA V SEL'SKOM KHOZYAYSTVE in Russian No 3, 1977 pp 27-29

GORSHKOVA, G. I., BEKETOVA, L. I., and KONDRAT'YEV, M. N. (TsINAO)

[Abstract] For the preparation of grain specimens with a fixed protein content, it is necessary to eliminate the activity of the enzymes of the grain itself, as well as the activity of the microorganisms situated on the grain surface which are capable of initiating this activity when the grain moisture is increased. On the basis of an experimental investigation of the conditions for preparing control specimens of wheat, corn, and pea grains, as well as flour, it has been ascertained that a primary factor in obtaining a fixed protein content is heat treatment (fixation). Figure 1; Tables 2; References 10: 7 Russian, 3 Western.

USSR

UDC 636.085.1

THE QUALITY OF THE FODDERS PRODUCED ON THE KOLKHOSES AND SOVKHOSES OF THE NONCHERNOZEM ZONE OF THE RSFSR

Moscow KHIMIYA V SEL'SKOM KHOZYAYSTVE in Russian No 3, 1977 pp 3-7

SHUMILIN, I. S., LEPESHKIN, V. V., and DERZHAVINA, G. P., Candidates of Agricultural Sciences (TsINAO), VOLKOV, B. A., Candidate of Agricultural Sciences (Republic Control Agrochemical Laboratory), and AFANAS'YEV, V. A., ("Petrovskoye" State Pedigreed Livestock Breeding Facility)

[Abstract] Surveys were conducted in 1971 to 1974 by the State agrochemical service of the RSFSR Nonchernozem zone (Northwest, Central, Volgo-Vyatka, and Ural areas) on a large number of hay and grass-meal samples to ascertain the content of acrotene, protein, and moisture. The results of these surveys show that, on the whole, the fodder quality for the RSFSR Nonchernozem zone is low. The carotene content is low, primarily due to infraction of the hay harvesting and storage technology. Grass-meal production is of low quality. These items and numerous other data point to the necessity of taking comprehensively into account the quality of the fodders, and balancing the rations of farm animals with account taken of the actual nutritive value of the fodders. Tables 5.

MECHANIZED PREPLANTING PROCESSING OF POTATOES

Moscow ZASHCHITA RASTENII in Russian No 6, 1976 pp 9-10

MICHENE, M. YA., deputy director for science, Pribaltiyskiy Filial, All-Union Institute for the Protection of Plants, GROSS, O. K., junior scientific collaborator, and BALYN'SH, M. T., head of the Latvian Station of Plant Protection

[Abstract] Methods of processing potatoes to prevent rhizoctonia root and stem rot are presented. The authors found that preplanting applications of fungicide of the combination 80% tetramethylthiuram disulfide (TMTD) and 50% fundazol, or 80% TMTD, copper sulfate, and boric acid were effective. For 30 l water, used for one ton of potatoes, in the first instance 750 g TMTD and 90 g fundazol were taken, and in the second instance 1050 g TMTD, 15 g copper sulphate and 300 g boric acid were used. Processing not only decreased rhizoctonia root and stem rot, but also protected plant tops from phytophthora infection. The potatoes are processed by various means. At several Latvian enterprises fungicides were applied at the time of planting with machinery GAN-8 or POU on potato planter SN-4B. Elsewhere potatoes are disinfected on a transport belt (Diagram 1). At potato sorting points they are disinfected when loaded for transport to the field in a special apparatus (Diagram 2). Figures 2; Table 1.

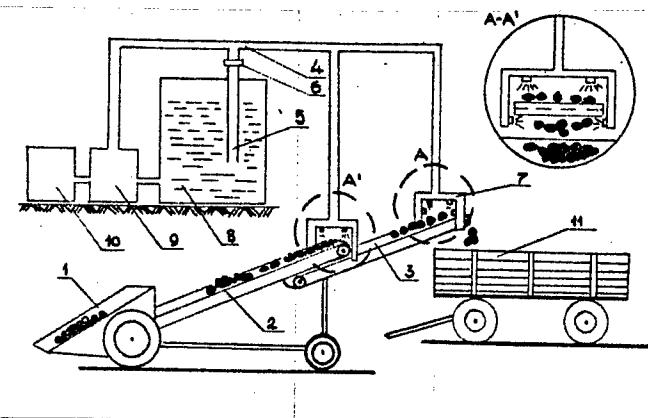


Diagram 1. Apparatus for disinfecting potatoes on a transport belt

Key:

1. Receiving bin of transporter	9. Pump
2. and 3. Transporter belt	10. Electric Motor
4. and 5. Supply line for pressure fluid	11. Means of Transport
6. Valve	
7. Rod with sprayer	
8. Reservoir	

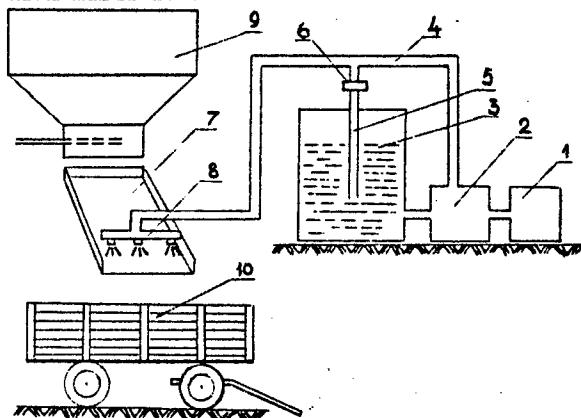


Diagram 2. Apparatus for disinfecting potatoes at potato-sorting points

Key:

1. Electric Motor
2. Pump
3. Reservoir
4. and 5. Supply line for pressure fluid
6. Valve
7. Table for treating potatoes
8. Rod with sprayers
9. Bin for storing potatoes
10. Means of transport

USSR

UDC 632.954:633.11

ELIMINATION OF WEEDS RESISTANT TO 2,4-D

Moscow ZASHCHITA RASTENII in Russian No 6, 1976 p 32

TEREKHOVA, M. A., candidate of biological sciences, Tselinogradskiy Toxicology Laboratory, All-Union Institute for the Protection of Plants

[Abstract] Researchers have experimented since 1971 in fields of the All-Union Scientific Research Institute of Grain Production with 80% dosanex (in doses of 3,4,5, and 6 kg/hectare), gesaran (1.5 and 2 kg), 60% bayyalan (2,3, and 4 kg) to kill weeds resistant to 2,4-D. Tests were conducted in fields of wheat Saratovskaya 29 in a soil of southern carbonate chernozem, clayey loam with a humus content of 4.4%. Solution applied was 400 l/hectare. Areas of the tests were 60-100 m² with applications repeated four or five times. Resulting weediness was 110-127 in 1m², with

resistant weeds to 2,4-D comprising 75-90%. Gesaran and dosanex acted more efficiently upon the weeds than did bayyalan; however the former appeared to damage the wheat in growth and development, and grain yield decreased. Therefore these preparations are not recommended for this zone and crop. Bayyalan, while not as effective as the other two herbicides, did not have a negative effect upon the wheat, and as a result, wheat yield with it was greater than in the other groups.

USSR

UDC 632.951:633.358

PIRIMOR FOR DEFENSE AGAINST PEA APHIDS

Moscow ZASHCHITA RASTENII in Russian No 6, 1976 p 32

POSYLAYEVA, G. A., aspirant of the Ukrainian Scientific Research Institute of Plant Growing, Selection and Genetics

[Abstract] The author participated in field experiments from 1974-75 to determine an insecticide safe for entomophages which would control pea aphids. The substances, examined separately, were 50% WP pirimor and etilon--Bi-58, sprayed in 0.1% solution on late ripening peas Khar'kovskiy 131 during a period of infestation. Pea aphids sprayed with pirimor decreased 99.9% by the fifth day after application and remained 99% less on the tenth day. With Bi-58 the effects were 95.5% and 18% less. In a control group the pests tripled in numbers, increasing from 57 to 160 specimens in a sample area. Pirimor did not show a negative effect on entomophages; loss with pirimor was 10%. With Bi-58 loss of entomophages was 100%. Preparation of seeds before planting with 0.1% aphicide solution also lowered the number of pests. The application of pirimor resulted in a decrease in the number of pea aphids, a lessening of the pest feeding period on the crop, greater plant productivity, and aphidophage preservation.

USSR

UDC 632.951:633.853.59

PROTECTION FROM THE SPIDER MITE IN COTTON

Moscow ZASHCHITA RASTENII in Russian No 6, 1976 p 32

KADYROV, K., candidate of biological sciences, IGAMBERDIYEV, KH., candidate of agricultural sciences, and OBIDDINOV, M., junior scientific collaborator, Kashkadar'inskiy Filial, All-Union Scientific Research Institute of Cotton Growing

[Abstract] The authors experimented with various acaricides in the course of three years against resistant forms of spider mites. In 1971 at the "Leningrad" kolkhoz of the Shakhrisabzskiy rayon of Kashkadar'inskaya oblast, the acaricides 20% EC kelthane, Bi-58, 50% WP milbex, and 30% metilmercaptofos were tested. Application was made four times on a 0.5 hectare plot. The best results were received from milbex (2 kg/hectare) and a mixture of kelthane with Bi-58 (1 + 2). On the third day there were mite destruction rates of 90.4 and 98.2% respectively. In 1971-1973 the effectiveness of metilmercaptofos (1.5 kg/hectare) and milbex, neoron and galecron were tested. The pests in the 2 kg/hectare area perished at the rate of 97-99.6%, in the 2.5 kg/hectare area--100%, and for metilmercaptofos with 1.5 kg--90.3%. The milbex, neoron and galecron effectiveness lasted longer--one month, compared to ten days for the metilmercaptofos.

USSR

UDC 632.9:633.521

ANTHRACNOSE DAMAGE TO FLAX

Moscow ZASHCHITA RASTENII in Russian No 6, 1976 p 23

KARPUNINA, Yu. T., candidate of biological sciences, All-Union Scientific Research Institute of Flax

[Abstract] The author examined anthracnose damage in flax in 1966-68 with normal field conditions. It was established that infected sprouts perish in great numbers, even those below ground level. The degree of damage depended largely upon climatic conditions, especially the amount of rain fall. June 1967 had abundant rainfall, and infection was extensive, 75.5% with 2.9% of the plants perishing; in 1968, with a dry June, 23% infection resulted, but destruction increased to 10.8%. Some measures which helped protect the crop were use of potassium fertilizer, wood ash, and microelements. In order to prevent anthracnose in flax, treatment of seeds and soil are crucial. An effective fungicide used at the VNIIL (Author's instituta) in 1969-72 was a mixture of tetramethylthiuram disulfide and

hexachlorocyclohexane applied to seeds with water. Research conducted at the kolkhoz "Mir" in 1972-75 indicated that air application of copper oxychloride (two times) with insecticides (firstly) and herbicides (secondly) reduced losses due to anthracnose.

Biochemistry

USSR

UDC 612.57+612.273

CHEMICAL THERMOREGULATION OF MUSCULAR THERMOGENESIS DURING ADAPTATION TO HIGH MOUNTAIN ALTITUDE

Leningrad FIZIOLOGICHESKIY ZHURNAL SSR IM. I. M. SECHENOVA in Russian Vol 63, No 2 signed to press 6 Apr 76 pp 337-340

BAZHENOV, YU. I., and SOODANBEKOVA, A., Institute of Physiology and Experimental Pathology of the High Mountains, Academy of Sciences KirgSSR, Frunze

[Abstract] The authors point out that opinions vary about the fundamental reasons for the lowering of body temperature which occurs during hypoxia; the drop is attributed in part to inhibition of mechanisms of chemical thermoregulation. It has been suggested that the decrease in heat production and in body temperature in oxygen insufficiency is due to inhibition of specific regulatory activity of the muscles. Other data indicate that, in oxygen insufficiency, lowering of body temperature also takes place where chemical thermoregulation is not inhibited while the magnitude of cold shivers increases. In the absence of detailed reports on the subject, the authors have examined the influence of prolonged (35-40 days) adaptation in a thermostat to high mountains (3200 m) on thermoregulatory heat production and muscular thermogenesis in white rats. The animals were maintained in winter in a mountain pass (Tuya-Ashu) at 23-24°. The control animals were subjected to the same conditions, but in Frunze (760 m). Data indicate that, in the animals adapted to a height which does not lower the intensity of their chemical thermoregulation, there is induced a decrease in output of heat per unit of muscle contraction; this could be one of the reasons for the lowering of body temperature during oxygen insufficiency. Figure 1; Tables 2; References 24: 12 Russian, 12 Western.

USSR

UDC 547.963.3+577.157.6

MODIFICATION OF DNA IN VITRO BY DNA-CYTOSINE-METHYLTRANSFERASES FROM E. COLI C AND E. COLI MRE 600: INCREASED RESISTANCE OF DNA OF BACTERIOPHAGE λ TO RII RESTRICTION SYSTEM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 233, No 2, 1977 pp 498-501

BOGDARINA, I. G., BUR'YANOV, YA. I., and BAYEV, A. A., academician, Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR, Pushchino, Moscow oblast

[Abstract] The infectivity of DNA phage λ methylated in vitro by DNA-cytosine-methylases from E. coli C and E. coli MRE 600 was examined in

transfection experiments on E. coli (RII). Enzymatic methylation of DNA phage λ was conducted in a medium of 40 mM tris-HCl, 10 mM 2-mercaptop-ethanol, 25 mM ethylenediaminetetraacetate, 30 mcM S-adenosil-L-methionine, with 6 mkg infectious DNA phage and from 30 to 50 units of DNA-methylases; volume was .35 ml. DNA phage λ methylated by DNA methylase RII exhibited firm resistance to infection by E. coli (RII). Infectivity of DNA phage λ methylated by DNA methylase RII varied on strains of E. coli (RII) and corresponding strains without methylated systems of RII. Infectivity of DNA phage λ methylated by DNA-cytosine-methylases from E. coli C and E. coli MRE 600 increased on E. coli with methylated system RII. An "RII-specific" character of DNA modification by DNA-cytosine-methylases from E. coli MRE 600 and E. coli C is proposed.

USSR

UDC 591.18:185.3:577.37:537.544

NEURON RESPONSE OF FISH TECTUM MESENCEPHALI TO SKIN SURFACE CHEMORECEPTOR STIMULATION

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 233, No 2, 1977 pp 502-505

VASILEVSKAYA, N. E., and STANKEVICH, L. N., Leningrad State University imeni A. A. Zhdanov

[Abstract] Authors experimented on the carp (Cyprinus carpio, 18-20 cm) rendered immobile by 1-2 mg Diplacin. Neuronal response to chemical and light stimuli were studied. Solutions of hydrochloric acid of 0.005 M; 0.01 M; 0.02 M; and 0.05 M were applied for ten seconds to a skin area on the front of the head, using a constant rate of application and washing the solution off with water. The light used was a photoflash of 2.5 milliseconds. Neuronal activity was registered extracellularly with a micropipet filled with 3.5 M NaCl. Microelectrodes were connected to a cathode repeater amplifier of biopotentials UBP-1-02 (band width 10-1000 hertz). Photographic records were made on oscillograph EMOF-2-01. With hydrochloric acid application, 80% of 45 photo-active units reacted with increased frequency of discharge. The remaining 20% reacted only to the photoflash. Of the chemosensitive neurons, 53% (group one) reacted only to the chemical, and 47% (group two) increased frequency of response with both chemical and light. The different amounts of chemical did not greatly change neuron response. The first group of neurons were primarily in layers closer to the surface, the second group in deeper layers. In the first group, with less photo activity, the frequency of responses during stimulation was greater. Results indicate the presence of chemosensitive neurons in the tectum mesencephali and some convergence of reaction to light and chemical stimuli for half of these neurons.

USSR/AFGHANISTAN

UDC 616.936(581)

THE PROBLEM OF MALARIA AND MALARIA CONTROL MEASURES IN NORTHERN AFGHANISTAN. COMMUNICATION 4. THE RESULTS OF EXAMINATIONS OF INHABITANTS IN NORTHERN AFGHANISTAN FOR GLUCOSE-6-PHOSPHATE-DEHYDROGENASE DEFICIENCY

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 46, No 2, Mar/Apr 77 signed to press 18 May 76 pp 188-190

SAYENKO, G. P., POLEVOY, N. I., YERMISHEV, YU. V., and PIVNENKO, V. G., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

Abstract The administration of primaquine in malaria prophylaxis is, among susceptible persons, accompanied by an acute hemolytic anemia due to an hereditary anomaly--deficiency of glucose-6-phosphate-dehydrogenase in the erythrocytes. In 1973, 450 males 5-78 years of age, belonging to 4 nationalities, were examined in northern Afghanistan for glucose-6-phosphate-dehydrogenase (G-6-PD) deficiency by the qualitative Bernshteyn test as modified by Abrashkin-Zhuchkov. No subjects with G-6-PD deficiency were found among Turkmens. Among the three other examined nationalities the investigated rate varied from 3 to 14%; among Afghans (Pushtuns) it comprised up to 14%, among Uzbeks it was 8%, and among Tadzhiks it comprised up to 4%. Recommendations are given on the possibility of conducting therapeutic and prophylactic measures under strict medical supervision which will permit prompt prevention of the possible appearance of side effects among some persons after the administration of primaquine. Tables 1; References 10: 5 Russian, 5 Western.

USSR

UDC 577.1

NEW DATA REGARDING CARDIOTROPIC PEPTIDE HORMONES OF THE HYPOTHALAMUS

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 12, 1976 signed to press 3 Nov 76 pp 91-92

GALOYAN, A. A., KARAPETYAN, R. O., Institute of Biochemistry, Academy of Sciences Armenian SSR

[Abstract] The researchers examined the cardiotropic effect of the following hormones: thyrotropin releasing hormone (TRH); luteinizing releasing hormone (LRH); melanocyte-stimulating hormone--release-inhibiting hormone (MSH-RIH); and a substance R (isolated by the authors as a carrier of certain neurohormones). The experiments indicated that probably only one

of the substances may be a precursor of hormonal beginnings related to the heart. Of the group, only LRH exerted an influence on the heart circulation. Small doses (1-3 mcg for the whole animal) increase circulation, large doses (3-10 mkg) lessen coronary flow. The data suggest that LRH is a precursor of cardiotropic hormonal beginnings in the brain. To clarify this question, Galoyan began studying action of various proteolytic enzymes, taken from a pig brain, on the releasing factor. Under the influence of protease, LRH splits, exerting coronary dilating influence in small and large concentrations. Hexapeptide was found to be the dilating factor. References: 6 Russian.

USSR

UDC 612.826.015.2

THE ROLE OF DOPA AND DOPAMINE IN ACTIVATION OF ACETYLCHOLINESTERASE IN THE RAT NEOSTRIATUM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 234, No 1, May/Jun 77
signed to press 13 Jan 77 pp 239-241

ROYTRUB, B. A., OLESHKO, N. N., Institute of Physiology imeni A. A.
Bogomolets, Academy of Sciences UkrSSR, Kiev

[Abstract] An attempt is made to study the direct influence of DOPA and dopamine on ACE activity in vitro. The interaction of ACE with DOPA and dopamine was studied in a reaction mixture consisting of a buffer system, acetylcholine, 4 mg of rat neostriatum tissue homogenate or 0.33 mg of highly purified, lyophilized ACE preparation, DOPA or dopamine. Five series of experiments were performed. The first series studied the influence of DOPA on ACE activity of the rat neostriatum tissue homogenate; the second series studied the influence of dopamine on this enzyme; the third and fourth series studied the influence of DOPA and dopamine respectively on the ACE preparation. The fifth series is not described in the article. The results of the studies showed that the ACE activity of the neostriatum tissue homogenate when interacted with DOPA and dopamine increased reliably. It should be emphasized that the increase in concentration of these catecholamines in the reaction mixture is accompanied by inhibition of ACE activity. The increase in ACE activity in the neostriatum homogenate indicates that the neostriatum tissue contains a factor which causes the activating capacity of dopamine to be manifested. The mechanism of increased ACE activity in these studies may be based on allosteric changes under the influence of catecholamines. References 14: 4 Russian, 1 Eastern European, 9 Western.

USSR

UDC 621.472

THE USE OF SOLAR ENERGY: DEVELOPMENT OF CHEMICAL AND BIOCHEMICAL RESEARCH

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 4, 1977 pp 11-22

SEMENOVA, N. N., academician

Abstract This report is dedicated primarily to the possibility of conversion of solar energy by purely chemical means, not by imitating nature, but using the principles governing chemical reactions in living organisms. This approach could be called chemical bionics. The greatest problem before chemical bionics at present is the problem of creating artificial photosynthesis. An artificial system which is at least theoretically possible of converting sunlight to energy even more efficiently than natural photosynthesis is that of photoinduced breakdown of water into molecular oxygen and hydrogen. Possible catalytic reaction plans for this process are outlined. If a catalyst could be found which could separate molecular oxygen from water by a four-electron mechanism upon absorption of four light quanta, an efficiency of solar conversion of 28% could be achieved, so that an area of 70 x 70 km of desert land located along side a supply of water would be sufficient to produce hydrogen sufficient to supply the current energy needs of the USSR. Other systems of utilization of solar energy currently under study include physical methods utilizing semiconductors and biochemical methods utilizing chloroplasts attached to the surface of special protein globules to increase their active life to one month. Microbiological processes involving chlorella which are converted by special bacteria to hydrogen or methane achieving an overall efficiency of approximately 8%, as well as processes of direct conversion of sunlight to thermal energy, currently being widely tested in the USA and other countries, are also mentioned. The author emphasizes the need to plan and finance research on the conversion of solar energy to energy forms usable in industry and daily life. Figure 1.

Biophysics

USSR

LASER DAMAGE TO A CADAVER AND TEXTILE FABRICS (EXPERIMENTAL STUDY)

Moscow SUDEBNO-MEDITSINSKAYA EKSPERTIZA in Russian No 2, Apr-Jun 77
pp 9-15

ARAKELYAN, L. A., PORKSHEYAN, O. KH and KHROMOV, B. M., Department of Forensic Medicine and Department of Operative Surgery, Leningrad Institute for the Advanced Training of Physicians

[Abstract] The authors used a pulsed neodymium glass laser, single radiation pulses at ranges of 70-100 mm being directed at tissues and organs. The output pulse energy reached 2700 J, the radiation energy density per cm^2 —337,500 J/ cm^2 . The laser beams produced unique lesions which can be used as consultative criteria. Irradiation of the skin produces an aperture 2 mm in diameter, surrounded by a burned area 5-6 mm in radius with a pale belt 1-2 mm in radius around that. Histologically, indications of coagulation necrosis are found, with honeycomb-like expansion of the epidermis and other changes similar to those of electric trauma. Specific changes were observed in the lungs and spleen: defect shapes up to 10 mm deep, up to 13 mm in diameter with a dense grayish white rim 2-3 mm in width. Bone damage characteristically showed a funnel-shaped circular penetrating defect with separation of the outer bone plate and smooth edges of the inner bone plate with apertures up to 8 mm in diameter. Textiles are damaged primarily by the thermal effect, somewhat less by mechanical effects. Defects similar to those produced by gunshots are produced. The color of the fabric irradiated is significant. Black is particularly susceptible to laser rays. Figures 5.

USSR

UDC 577.391

CHANGE IN RABBIT SKIN PERMEABILITY WITH COMBINED EXPOSURE TO LASER AND ROENTGEN EMISSIONS

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 12, 1976 signed to press 8 Oct 76 pp 22-25

MKHEYAN, V. YE., AYRAPETYAN, F. O. and KHACHATRYAN, A. A., Radiobiology Sector, Ministry of Health Armenian SSR

[Abstract] The authors examined disturbances of tissue permeability in rabbits due to laser and X-rays. Experiments were conducted on 20 albino rabbits (2-2.5 kg in weight) with five as a control group. A mixture of enzyme with coloring was injected into the animals and then they were exposed to laser apparatus Arzii-206 with waves 6943 Å, energy pulse 4 J,

and the X-ray therapy apparatus RUM-11 with a dose of 650 r using standard conditions. After 24, 48, 72, and 96 hours, the area of coloring in the rabbits' skins was measured and compared with the control. Dispersion in the exposed rabbits was initially 1.5-2 times greater than in the control group. The exposed animals approached the norm in a later period (on the 30-35th day). When animals were exposed to the combined rays and then injected with the coloring and enzymes, the index of color dispersion was 1.5 times greater than in the control group. In the first three days after the test, skin permeability increased due to radiation depolymerization of skin hyaluronic acids. Figures 2; References 9: 8 Russian, 1 Western.

USSR

UDC 576.3:597.554-13

MEMBRANE POTENTIALS OF THE CARP CELLS DURING EARLY EMBRYOGENESIS

Kiev DOPOVIDI AKADEMIYI NAUK UKRAYINS'KOY RSR, SERIYA B. GEOLOGICHNI-KHIMICHNI TA BIOLOGICHNI NAUKI in Ukrainian No 3, Mar 77 signed to press 24 Dec 75 pp 274-275

MELNIK, V. P., and SABODASH, V. M., Institute of Hydrobiology, Academy of Sciences Ukrainian SSR

[Abstract] The membrane potential (MP) of the carp (*Cyprinus carpio*) blastomere 40 min. after the egg fertilization is -8.3 ± 2.1 mV, as compared with -22.6 ± 3.4 mV for that of an unfertilized egg. It reaches -47.5 ± 3.4 mV in six hours of division (morula stage). Increase in the MP takes place very rapidly during the first hour of development, and starting with the fourth hour, it slows down somewhat and reaches a stationary level in six hours. This level is equal approximately to the MP of the majority of somatic cells of a mature organism. Changes in the blastomere MP during the first six hours of development is the reflection of physical, chemical and metabolic processes taking place in cells during their early differentiation stages. Figure 1; References 12: 4 Russian, 8 Western.

USSR

UDC 612.018

EFFECT OF HYDROCORTISONE ON THE SIZE OF SYNAPTIC ENDINGS OF MOTORNEURONS
IN THE SPINAL CORD

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 233, No 2, 1977 pp 506-508

YEMEL'YANOV, N. A., KORNEYEVA, T. E., Institute of Physiology imeni
I. P. Pavlov, Academy of Sciences USSR, Leningrad

[Abstract] Experiments were conducted on frogs (Rana temporaria) under hexanal narcosis (8mg/100g weight) to compare hydrocortisone (HC) effects to electrical effects on motorneurons with respect to synapse size. For one group of frogs 1 mg hydrocortisone in 0.2 ml physiological solution was injected into the lymphatic sac three hours before the experiment. Control animals received injections of solution in like amounts. Spinal cords were opened at the 5th-11th roots and cut at the 9th and 10th roots. Posterior roots were stimulated in the course of 10 min. with square wave impulses of 0.2 milliseconds, strength 3 V, 1/sec. Biopotentials were taken from anterior roots. The stimulated part of the spinal cord was sectioned and stained. Diameters of synaptic endings of dendrites were measured with an ocular-micrometer. Four series of experiments were performed: control, ten minute stimulation, introduction of HC, and stimulation under the influence of HC. After stimulation of posterior roots, an increased diameter of synaptic endings was observed (1.57 ± 0.03 mcm compared to 1.15 ± 0.02 in the control group). The introduction of HC led to some increase in synapse ending (1.29 ± 0.02 mcm). Synapse size with stimulation of posterior roots plus HC did not surpass the measurements with HC alone (being 1.32 ± 0.03).

Entomology

USSR

UDC 615.285.7.036.8

RESULTS OF STUDY AND PROSPECTS FOR USE OF THE REPELLENT N,N-DIETHYL-2,5-DIMETHYLBENZAMIDE (DEXA)

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian
Vol 46, No 2, Mar/Apr 77 signed to press 14 Nov 75 pp 216-221

DREMOVA, V. P., GLEYBERMAN, S. Ye., NAUMOV, YU. A., ZVYAGNITSEVA, T. V., TEREKHOVA, A. I., MARKINA, V. V., SMIRNOVA, S. N., ISAKOVA, A. P., KAZITSKAYA, L. I., and YAROSLAVSKAYA, L. A., All-Union Scientific Research Institute of Disinfection and Sterilization, Ministry of Health USSR

[Abstract] An economical and convenient method has recently been developed in the USSR, by means of which N,N-diethyl-2,5-dimethylbenzamide (DEXA) can be obtained by the interaction of N,N-diethylcarbamylchloride with p-xylool in the presence of anhydrous ferric chloride, with purification of the preparation by vacuum distillation. High repellent properties have been established for DEXA with respect to fleas (*X. cheopis* Roth) on the basis of laboratory experiments, and with respect to mosquitoes *A. hexodontus* Dyar, *A. punctor* Kirby, *A. caspius* caspius Pall, *An. pulcherrimus* Theob., blackflies *S. venustum* Say, *T. maculata* Mg., midges *C. pulicaris* L., ticks *I. persulcatus* P. Sch., and other bloodsucking insects on the basis of field observations in various climatic zones. With regard to its acute and residual repellent effect, DEXA is in many cases similar to DETA. Due to its skin-irritating properties, DEXA is recommended for the impregnation of nets, capes, and various articles of clothing; it does not manifest inhalation toxicity. A formula has been developed for an emulsifying concentrate containing 80% DEXA. Tables 4; References 5: 4 Russian, 1 Western.

USSR

UDC 595.421(571.63)

RARE FORMS OF IXODID TICKS IN PRIMORSKIY KRAY

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 61, No 3, Mar 77 pp 475-476

KOLONIN, G. V. and BOLOTIN, Ye. I., Pacific Ocean Institute of Geography, Far Eastern Scientific Center, Academy of Sciences USSR, Vladivostok

[Abstract] The authors studied the population of ixodid ticks in central Sikhote-Alin' according to their latitude profile in the spring and summer field seasons of 1973-1975: along the coast of the Sea of Japan, the Khanka Lake divide (Kavalerovskiy, Dal'negorskiy, Chuguevskiy and Spasskiy rayons). Materials are presented on the population of the following rare

forms of ticks: *Ixodes pomerantzevi* Serd.; *Ixodes caledonicus* Nutt; and *Haemaphysalis flava* Neum. *Ixodes pomerantzevi* is absent from the West Sikhote-Alin' and occurs regularly on the eastern slope of the mountain ridge. *I. berlesei* was found for the first time in the Far East on *Apus pacificus*. New findings of *Haemaphysalis flava* (imago, nymphae, larvae) are recorded. References: 4 Russian.

Environmental and Ecological Problems

USSR

UDC 626.80

MODELLING OF SOIL PROPERTIES AND PROCESSES OF SOIL FORMATION

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 3 BIOLOGIYA in Russian,
No 1, Feb 77 signed to press 16 Sep 76 pp 118-124

TOLCHEL'NIKOV, YU. S., and KUZNETSOV, V. V.

[Abstract] This is a general article on the use of modelling in the development of soil science as an exact science. The authors list the general requirements for modelling: i) modelling is based, as a rule, on generalization and simplification; ii) it presents special demands on the traditional method of study of an object and on choice of those of its properties subjected to the research, and on the detailed character of the observations; iii) creation or choice of a model are determined by the presence and quality of the initial data produced by traditional or modern methods (emphasis here is on quantitative, reproducible data); iv) modelling of natural processes is complex and multi-disciplinary problem, which makes it possible to combine the research of scientists of distinct disciplines, and to use data from distinct branches of knowledge; v) models are created for theoretical (theorizing, classifying) and practical (planning, decision, prognosis) purposes; and vi) idealization of objects and processes studied with models must be subject to strict rules. Currently used in soil science are such forms of modelling as physical (laboratory and field), cartographic, and mathematical. The introduction of mathematical methods of modelling in soil sciences required development of physical and cartographic models of properties of soil and of soil-forming processes. Of special importance is the development of imitative modelling, based on broad use of computers. No references.

USSR

UDC 632.7:633.51:632.934

EFFECTS OF MODERN PESTICIDES ON BOTH USEFUL AND HARMFUL ENTOMOFAUNA OF COTTON

Leningrad ENTOMOLOGICHESKOYE OBOZRENIYE in Russian Vol 51, No 1, 1977
pp 3-15

SUKHORUCHENKO, G. I., NIYAZOV, O. D., and ALEKSEYEV, YU. A., All-Union Scientific Research Institute for Plant Protection; Institute of Zoology, Academy of Sciences TSSR, Ashkhabad

[Abstract] Since the assortment of pesticides available in the USSR has significantly changed in recent years, studies to determine those pesticides which are relatively safe for useful entomofauna for their use in

integrated pest control programs are quite important. With this purpose in mind, the laboratory of insecticides and acaricides of the All-Union Scientific Research Institute for Plant Protection has for a number of years evaluated the initial and residual toxicity of modern insecticides and acaricides. The studies have included determination of the influence of treatment with insecticides and acaricides with various degrees of specificity on the relationship between the main groups of phytophages and entomophages in the cotton field agrobiocenosis. This article reports on the results of such studies for 17 modern cotton field pesticides. The results of the study indicate that it is most expedient to use specific compounds (mildex, kelten, acrex, etc.) which, due to their high toxicity for the harmful entomofauna and their relative nontoxicity for useful entomofauna, influence the development of the pests not only in the season when used but also, possibly, the initial level of contamination of the field of the next year, due to the high ratio of natural enemies of the pests left living. Among the broad-spectrum compounds studied, fozalon is most interesting for integrated pest control programs since, due to its activity against a broad range of phytophages and its relative safety for entomophages plus its lack of aftereffect, it holds the development of pests for more than 15 days at a level significantly lower than the control level. Tables 7; figure 1; references 22: 9 Russian, 13 Western.

USSR

UDC 348/502.74

LEGAL PROBLEMS IN ENVIRONMENTAL PROTECTION

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 4, 1977 pp 64-70

KOLBASOV, O. S., doctor of juridical sciences

[Abstract] The basis of the Soviet concept of legal protection of the environment is the dialectic-materialistic concept of the interrelationship between objective and subjective factors determining the relationship between natural and social conditions of human life. People cannot change the laws of nature, but they can, and must, understand them and properly apply them in the interests of the development of the society. This requires that we understand the essence of ecological requirements which flow from the objective laws of nature and determine human behavior in the relationship to the environment. In Soviet juridical science, environmental protection has become an object of special studies only comparatively recently. One of the most important problems before the law is that of

defining the rights and responsibilities of the citizen to enjoy and protect a favorable environment. Conflicts arise between the need to conserve the environment and the need of industry, particularly those branches and plants which have been shifted to the new system of independent financing, to maximize output and minimize cost in order to provide the maximum economic benefit to the nation. Since the problem of environmental pollution is nationwide, there is a need for an all-union system of environmental protection laws to supplement the existing laws and rules, developed largely by the individual union republics. There is a clear need for further scientific research to determine the actual damage to the environment resulting from various forms of pollution, to guide the Soviet legal system in developing laws which both preserve the environment and stimulate necessary economic growth.

USSR

UDC 502.75

RARE PLANTS: ACCOUNTING AND PRESERVATION

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 4, 1977 pp 71-78

GOGINA, YE. YE., candidate of biological sciences

[Abstract] All forms of living organisms represent the result of long paths of evolution and all (except for clearly pathogenic organisms) have a right to exist. Many forms of plants have already become extinct, and with increasing scales of human activity, still other species are threatened. The radical solution to this problem is a total restructuring of our attitude toward natural resources. This is a long and difficult process, and everything must be done to accelerate it, minimizing possible losses while this process is under way. This article presents photographs of a number of plants native to the Soviet Union which are on the endangered species list, and calls for collection and cataloguing of information on plants which are or should be on this list, in order that steps can be taken in time to save them from extinction. Delay in this work is dangerous, threatening the loss of species. The editors promise to continue the publication of photographs of plants and flowers on the endangered species list, to help to familiarize the readers of the journal with plants in need of protection. Figures 8; References 8: 3 Russian, 5 Western.

Epidemiology

USSR/MONGOLIAN PR

UDC 616.9-084.4(517.3)(091

RESULTS OF CONTROL OF INFECTIOUS DISEASES IN THE MONGOLIAN PEOPLES REPUBLIC IN 55 YEARS OF PUBLIC HEALTH SERVICE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4,
Apr 77 signed to press 11 Aug 76 pp 140-142

ZHAMBA, G., KUPUL, ZH., and AVILOV, YE. N., Institute of Hygiene, Epidemiology, and Microbiology, Ministry of Health MPR

[Abstract] A public health service was organized in the Mongolian Peoples Republic in October 1976. The authors describe the health situation prevailing in the MPR at the time of the organization in order to emphasize the accomplishments since that time. At present over 10% of the state budget is allocated to the needs of health. Of special importance is training of key personnel. Numbers of physicians are not given, except that the MPR is said to be one of the developing countries; the number of auxiliary medical personnel is increasing yearly. Mean life expectancy has risen to 65 yrs; the death rate has been lowered, birth rate is higher. Smallpox vaccination brought about its liquidation (1940). With the help of the USSR, plague control measures have resulted in no reports of the disease for 20 yrs. Epidemic control institutions continue prophylactic work in the natural foci of plague existing in the MPR. All children receive prophylactic injections--every year about 1 million prophylactic injections assure a sharp drop in infectious diseases, including polio-myelitis, whooping cough, diphtheria, tetanus, tuberculosis, smallpox, and typhoid. Whereas, in 1959-1966, diphtheria and whooping cough tended to rise, in 1975 no cases of diphtheria were reported, and whooping cough morbidity dropped by a factor of 100. Up to recent years, measles occupied first place among childrens infections; mass immunization in 1973 resulted, in 1975, in no reports of that disease. Typhoid in 1975 dropped by a factor of 5 in comparison with 1965; dysentery, by a factor of 3.7; hepatitis, a factor of 2. Intestinal infections, especially hepatitis, are still a serious problem in the MPR. All aymak sanepid stations have bacteriological laboratories to control infectious diseases. In addition to the Republic House of Sanitary Education, all cities and aymak sanepid stations have an office of sanitary education, which is the official center for sanitation-educational work. Help in all of the public health endeavors is said to be furnished by the USSR and other socialist countries.

References: 2 Russian.

USSR

UDC 614.4:061.3(470.23-25)"1975"

THE MEDICAL PARASITOLOGY SECTION OF THE XV SCIENTIFIC PRACTICAL CONFERENCE
OF PHYSICIANS OF THE LENINGRAD SANITARY EPIDEMIOLOGICAL SERVICE

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian
Vol 46, No 2, Mar/Apr 77 pp 244-246

PODOLYAN, V. YA., Leningrad Institute for the Advanced Training of
Physicians, and ZOLOTUKHIN, V. A., Leningrad Municipal Sanitary Epidemiolog-
ical Station

[Abstract] The 15th Scientific Practical Conference of Physicians of the
Leningrad-Sanitary Epidemiological Service took place in Leningrad, 22-24
November 1975. The Medical Parasitology Section, organized by the
Parasitology Division of the Leningrad Municipal Sanitary Epidemiological
Station jointly with the Leningrad Parasitological Society participated in
the conference. The Section was under the chairmanship of professors
V. Ya. Podolyan (Leningrad Institute for the Advanced Training of
Physicians) and A. V. Gutsevich (Zoological Institute, AS USSR). Of the
42 works included in the summaries of reports presented at the conference,
29 reports were presented and discussed at the Section.

USSR

UDC 614.449.51:628.4

INVESTIGATION OF THE EFFECTIVENESS OF THE SOIL METHOD FOR DEHELMINTHIZATION
OF THE SEWAGE USED FOR FERTILIZATION

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian
Vol 46, No 2, Mar/Apr 77 signed to press 8 Jan 74 pp 229-231

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[Abstract] With the aim of testing the effectiveness of the soil method
of sewage dehelminthization, experiments were conducted in the Moskovskaya
oblast to study the life terms of ascarid eggs in the Ramenskaya and
Solnechnogorskaya districts. During four years of observation (1967-1970)
in experimental plots with podzol sandy soil, it was established that the
number of ascarid eggs at a depth of 7-10 cm decreased by a factor of 3.1
to 8.3, depending upon the number of times the soil had been plowed over
or spaded over. Despite this, a considerable portion of viable ascarid

eggs remained in the soil. Therefore the use of undisinfected organic fertilizers (sewage, sludge residues, etc.) on agricultural fields with prevalent sandy and loamy soils for growing food vegetables not subject to heat treatment is not permitted, and must be forbidden by sanitary rules. Tables 1; References: 3 Russian.

USSR

UDC 576.895.121.095.38:597

INCIDENCE OF THE INFECTION OF FISH FROM WATER BODIES OF THE KOMI-PERMYATSKIY NATIONAL OKRUG BY DIPHYLLOBOTHRIUM LATUM LARVAE

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 46, No 2, Mar/Apr 77 signed to press 9 Feb 76 pp 223-224

GALEYEVA, N. G., Department of General Biology, Perm' Medical Institute

[Abstract] A high incidence of the infection of pike, burbot, perch, and ruff from various water bodies of the Kama river basin, particularly the Kama Reservoir, by *D. latum* larvae was established in an investigation conducted in the 1973-1975 period. The principal role in infection of the population of the Komi-Permyatskiy national district belongs to pike and burbot, which comprised about 13% of the total catch and were extensively used for food in a raw, lightly salted, and mildly sundried state.

USSR

UDC 616.995.121(Diphylllobotrium)-036.2(470.341)

PREVALENCE OF DIPHYLLOBOTHRIASIS IN THE AREA OF THE GOR'KIY RESERVOIR

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 46, No 2, Mar/Apr 77 signed to press 3 Mar 75 pp 222-223

YURASOVA, T. S., Gorodetsk Rayon Sanitary Epidemic Station; Gor'kiy Medical Institute.

[Abstract] The circumstances and causes for the formation of diphyllobothriasis foci among the residents of the shore areas of the Gor'kiy reservoir in the period of its formation and long-term functioning are indicated. The shore zone of the Gor'kiy reservoir, which went into operation in 1955, is rather densely settled but is poorly provided with sewage-disposal facilities, and a large amount of fecal sewage drains into the reservoir. The fish population of the reservoir becomes infected by *diphylllobotrium* larvae; when the fish are caught and eaten by the local residents, diphyllobothriasis is passed on to the human population. A number of therapeutic and prophylactic measures are proposed for decreasing the incidence of the disease. References: 6 Russian.

Hydrobiology

USSR

UDC: 591.185.5:597.554

CERTAIN ACOUSTICAL PROPERTIES OF THE SWIMMING BLADDER OF THE CYPRINUS CARPIO

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13, No 2, Mar/Apr 77 signed to press 20 July 76 pp 198-202

VAYTULEVICH, S. F., Laboratory for the Physiology of Hearing, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

Abstract This work was intended to determine the acoustical parameters of the swimming bladder of the carp cyprinus carpio by means of a direct method, measurement of the pressure within the bladder upon excitation by audio frequency signals. The fish were anesthetized, muscle and two-three ribs removed to reveal the swimming bladder, the fish were rigidly fixed in a holder so that a small portion of the swimming bladder was not covered with water, and a needle sound pressure probe was inserted. Oscillations were excited using tones and rectangular audio pulses in the 200-3000 Hz range. The sonic pressure in the external field and within the swimming bladder was measured. Graphs of the amplitude-frequency characteristics, reaction curve of the swimming bladder and oscillograms of the acoustical wave form near and within the swimming bladder are presented. As was to be expected, the physical response curve of the swimming bladder corresponded rather closely with the behaviorally determined auditory response curve of the fish. Figures 3; References 9: 5 Russian, 4 Western.

Immunology

USSR

UDC 612.017.1.014.46:(615.917:547.262

INFLUENCE OF ALCOHOLIC INTOXICATION ON NATURAL RESISTANCE OF THE BODY TO INFECTIVE-TOXIC ACTIONS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 28 Jul 76 pp 115-117

AVER'YANOVA, L. L., and FOMINA, V. G., Institute of General Pathology and Pathological Physiology, Academy of Medical Sciences USSR, Moscow

[Abstract] The authors cite the work of several authors (Yershov, A. I., 1966; Kononenko, V. A., 1956; and Hudolin, V., 1975) which indicated that chronic alcoholic intoxication is associated with lowering of resistance to some infectious diseases and promotes a severer course of these diseases. The opinion also exists that alcohol in moderate doses prevents development of colds in non-alcoholics after freezing. They also point to their earlier work which indicates that in experimental animals, which received ethyl alcohol over a 45-day period, stimulation was seen of several mechanisms of natural immunity (bactericidal properties of their blood serum, complement and lysozyme activity of the serum, phagocytosis of neutrophils), during the early periods (3-10 days) and depression of these properties with more extended use of the alcohol (20-30 days). The title research is an extension of their earlier work. White mice received a 40% solution of EtOH, 0.1 ml per mouse, for 5, 15 or 30 days; 1 day after the last administration each mouse received a toxin in 0.2 ml or a culture of staphylococcus in 0.5 ml, subcutaneously in an LD₅₀ dose. When the mice were given ethylalcohol for 5 days they showed a reliable rise in resistance to intoxications induced by toxins of *Clostridium perfringens* and of staphylococcus. A 30-day alcohol intoxication promoted a significant lowering of resistance of the mice to both of the toxins and to a staphylococcal culture. Tables 3; References 5: 3 Russian, 2 Western.

USSR

UDC 615.372:576.851.555

PROPERTIES OF CL. PERFRINGENS TOXOIDS PRODUCED FROM PURIFIED TOXINS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 28 May 76 pp 110-114

DMITRIYEVA, L. N., SHEMANOVA, G. F., VLASOVA, YE. V., and AKHUNDOVA, K. A., Moscow Scientific Research Institute of Vaccines and Sera imeni Mechnikov; Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

[Text--Conclusions in Russian text] Experimental toxoids of *Clostridium perfringens*, produced from alpha-toxins of various degrees of purity, have a higher

immunogenicity than toxoids prepared by detoxication of alpha-toxin in culture liquid; immunogenicity rose with increase in degree of purity of the alpha-toxin employed in the preparation of the toxoid. The alpha-toxin of *Cl. perfringens*--obtained after a two-stage purification which involved initial concentration and fractionation on DEAE-cellulose under conditions of negative sorption--converts, as the result of detoxication, into the toxoid whose immunogenicity surpasses by a factor of 3-4 the immunogenicity of the manufactured preparations; the toxoid was harmless, in a dose of 100 BU it was absorbed on 2-3 mg of aluminum hydroxide and was not inferior, in stability of antigenic properties and yield, to the manufactured toxoids. A toxoid of *Cl. perfringens* prepared from highly-purified alpha-toxin exceeded, in immunogenicity, the manufactured preparation by a factor of 10, it was harmless and was absorbed in a dose of 100 BU on 1-2 mg of aluminum hydroxide. Tables 2; References: 6: 2 Russian, 4 Western.

USSR

UDC 615.372:576.851.45).015.46

SPEED OF FORMATION OF POSTVACCINAL IMMUNITY TO PLAGUE IN ANIMAL EXPERIMENTS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 14 May 76 pp 97-98

CHICHERIN, YU. V., YEVSTIGNEYEV, V. I., and LEBEDINSKIY, V. A.

Abstract Development of agents and methods of vaccine prophylaxis of plague, the dynamics of formation of the immunity, its duration and strength are of great practical importance. For this reason it is expedient to vaccinate and revaccinate people at short periods under conditions of an epidemic. The inhalation method of immunization with live vaccine is presently one of the most effective ways for specific prophylaxis of pneumonic plague; the speed of formation of post-vaccinal immunity to plague with this method of application is said to have received inadequate study. The authors present the results of their studies of single inhalation immunization of guinea pigs with live plague vaccine. Non-susceptibility to plague was formed within one day after application; on the third day the level of resistance increased by a factor of 68 in comparison with controls. Immunity reached maximum strength on the 20th day after vaccination; in the third month, a decrease of 1.6-fold was seen in the level of specific resistance. References: 4 Russian.

USSR

UDC 616.428-022.7:576.85.553.097.2.077.3:576.8.073

DETECTION OF LOCALIZATION OF CL. BOTULINUM ANTIGENS IN CELLS OF A REGIONAL LYMPH NODE BY THE IMMUNOFLUORESCENCE METHOD

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 20 Apr 76 pp 91-94

VASIL'YEVA, T. A., and GERBEK, G. V., Tomsk Institute of Vaccines and Sera; Tomsk Medical Institute

[Abstract] Study has been made of toxoids type A, B, and E of Cl botulinum in the regional lymph nodes of rabbits in order to determine the antigenicity of these toxoids, a point of essential significance in production of polyvalent hyperimmune sera, including anti-botulin sera. Localization of antigens in the cells was revealed by indirect immunofluorescence. This showed that different types of lymph tissue cells participated in the ingestion and digestion of these antigens: the antigens of the A and B types were revealed in the cytoplasm of pseudoeosinophils and then in the macrophages; the antigen of type E was revealed in the macrophages of the regional lymph node. Toxoid of type E was found to be a strong antigen against Cl. botulinum, toxoid of type A, a weak antigen, and type B toxoid to occupy a middle position. This has been confirmed by earlier findings of Vasil'yeva (1975) in production of polyvalent, anti-botulinum serum. Figures 3; References 10: 8 Russian, 2 Western.

USSR

UDC 576.858.25.095.6+576.858.25.095.383

REPRODUCTION AND THE INTERFERON-INDUCING CAPACITY OF TOGAVIRUSES

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press 19 Jul 76 pp 216-222

YEMEL'YANOV, B. A., and NOVOKHATSKIY, A. S., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Text-English language abstract supplied by authors] A comparative study of the correlation between reproduction and the interferon-inducing activity of viruses in chick embryo fibroblast cultures was carried out with members of different groups of togaviruses: alphavirus (Venezuelan equine encephalomyelitis virus, VEE) and flavivirus (Saint Louis encephalitis virus, SLE). The correspondence between cycles of accumulation of intracellular and extracellular viruses and the dynamics of interferon production, the synthesis of which began early in the stage of exponential virus growth and correlated with the dynamics of their reproduction, was

determined. Reproduction of the viruses was found to be directly dependent upon the multiplicity of infection; optimal infecting doses for the induction of the largest amounts of interferon were established. The calculations of the reproductive activity of VEE and SLE viruses showed their yield per one cell to be approximately 10,000 PFU and 1,000 LD₅₀, respectively. Partial thermal inactivation of the viruses resulted in decreased yields of the infectious virus and interferon production. The regimen of thermal inactivation at which infectivity was lost completely, but the interferon-inducing capacity was retained, probably due to residual synthesis of viral RNA, was established for VEE virus. From the fact that the pattern of realization of genetic information is similar for both viruses, a similar mechanism of interferon synthesis induction is assumed. Figures 3; Table 1; References 17: 10 Russian, 7 Western.

USSR

UDC 576.858.095.383

INVESTIGATION OF ASSOCIATION BETWEEN MANIFESTATION OF HYPOREACTIVITY (TOLERANCE) IN INTERFERON INDUCTION AND THE PRESENCE OF VIRUS INTERFERON INDUCER IN CELLS OF A TOLERANT ANIMAL

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press 23 Dec 76, pp 206-215

MARCHENKO, V. I., ZUBANOVA, N. A., DYUYSALIYEVA, R. G., VORONINA, F. V., DELIMBETOVA, G. A., and BOCHAROV, A. F., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Moscow

Text-English language abstract supplied by authors / Experiments revealed parallelism between the duration of the main manifestations of the hypo-reactivity phenomenon (tolerance) in interferon induction and the duration of detection of a masked infection with the inducer virus (Newcastle disease virus) in peritoneal exudate cells of tolerant mice. It was also shown that, after contact of chick fibroblasts with a dose of interferon which completely inhibited replication of vesicular stomatitis virus infecting the cells, this virus was found in the cells in the masked form. Persistence of a virus interferon inducer in the masked form appears to play a significant role in the mechanism of tolerance as well as creation in the interferon-treated cells of conditions for masking viruses infecting these cells. Figures 4; Table 1; References 11: 7 Russian, 4 Western.

USSR

UDC 616.988.7-018.1-085.339:576.858.095.383

INFLUENCE OF EXOGENOUS INTERFERON ON THE COURSE OF LATENT ONCORNAVIRUS INFECTION OF J-96 CELLS

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press 30 Jul 76 pp 196-202

SOLOV'YEV, V. D., KITSAK, V. YA., BEKTEMIROV, T. A., BOCHAROV, A. F., MOYSIADI, S. A., DELIMBETOVA, G. A., and CHUYEV, YU. V., Central Institute for the Advanced Training of Physicians, Moscow

Text-English language abstract supplied by authors The effect of exogenous leukocyte interferon on the course of chronic oncornavirus infection of lymphoblastoid J-96 cells chronically producing type B virus was studied. By means of radioisotope analysis and electron microscope examinations it was shown that upon long-term passage of the cells (18-34 passages) in the presence of interferon (10 units/ml) the process of virion formation in the cells was inhibited 2.0-4.4-fold and virus budding to a lower extent (1.6-2.7-fold). Interferon exerted no inhibiting effect on the formation of intracytoplasmic virions of type A. The employment of KC-test showed the formation of intracytoplasmic virions of type A. The employment of KC-test showed the oncornavirus produced by J-96 cells in the presence of interferon to have retained its biological activity, being able to induce synthesis of the indicator KC cells. Examination of the cell membranes by electrophoresis in polyacryl amide gel showed that interferon contributed to accumulation of glycoproteins with high molecular weights (115,000, 100,000 and 68,000 daltons) in this cell fraction. Simultaneously the experimental cells were found to have 2-3-fold increased amount of inter-species group-specific antigen of Mason-Pfizer virus. The mechanism of action of interferon on multiplication of J-96 cell oncornavirus is discussed. Figures 3; Tables 2; References 20: 3 Russian, 17 Western.

USSR

UDC 616.995.1-078.73

ACHIEVEMENTS AND WAYS FOR FURTHER DEVELOPMENT OF THE IMMUNODIAGNOSTIC APPROACH IN HELMINTHOLOGY

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 46, No 2, Mar/Apr 77 signed to press 1 Dec 76 pp 131-137

LEYKINA, YE. S., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy Ministry of Health USSR, Moscow

Abstract The principal criteria of cellular and humoral immunity are shown for T- and B-helminthiases, and an assessment of the current immunological diagnostic methods for these diseases is presented, the

methods being classed into three groups in relation to the degree to which they have been studied. It is noted that up to now, the diagnostic significance of a number of the immunity criteria has scarcely been studied at all, and that study of the efficiency of new immunological tests, particularly of allergic reactions *in vitro*, should be included among the trends of further work on helminthiasis immunodiagnostics. In connection with the recently ascertained multiplicity of somatic and physiological helminth antigen components, and the presence of numerous components among them that are common to both types, as well as those manifesting a cross reaction with the host's antigens, much significance is attributed to research in the quest for methods of obtaining narrowly specific active antigens. At present, methods of immunological survey of the population are being used for the earliest and most complete ascertainment of helminth-invaded persons, for study of the epidemic process in depth, for assessing the efficacy of therapy, as well as of other anti-helminthiasis measures, study of the clinical pattern and pathogenesis of helminthiases. Tables 2; References 7: 6 Russian, 1 Western.

USSR

UDC: 616-006-056-07:616-008.931

THE STATUS OF THE SPECTRUM OF ISOENZYMES OF LACTATE DEHYDROGENASE IN CERTAIN ORGANS AS AN INDICATOR OF THE RESISTANCE OF THE ORGANISM TO THE DEVELOPMENT OF TUMORS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, 1977
pp 23-25

TERESHCHENKO, I. P., ZARETSKAYA, I. S., SHUBINA, A. V. and BOYKOVA, V. I.,
Moscow Oncologic Institute imeni P. A. Gertsen

[Abstract] Biochemical and histochemical data are presented concerning the status of the isoenzyme spectrum of lactate dehydrogenase in certain endocrine and immunocompetent organs of intact animals with various genetically determined resistance to tumor development (mice), as well as data on the change in the spectrum of this enzyme in various stages of carcinogenesis. The studies showed that the isoenzyme spectra of lactate dehydrogenase in the adrenal glands, testicles, thymus, lymph nodes and spleen of the intact animals, with varying genetically-determined sensitivity to the formation of tumors, have clear peculiarities. The materials thus indicate that the isoenzyme spectrum of lactate dehydrogenase, reflecting the status of metabolic processes in the endocrine and immunocompetent organs, is also related to peculiarities of their morphologic structure. It is important to emphasize that the development of tumors in predisposed animals is accompanied by further deepening of changes in the LDH isoenzyme spectrum in the organs mentioned above, while failure to develop a tumor can be associated with restructuring of the spectrum of the isoenzymes in the direction of predominance of anode fractions. Consequently, the nature of the LDH spectrum in the endocrine and immunocompetent organs is one indicator of the resistance of the organism to the development of tumors. Figure 1; References 4: 2 Russian, 2 Western.

Industrial Microbiology

USSR

UDC 577.156

REGENERATION OF SILVER FROM LIGHT-SENSITIVE MATERIALS BY PREPARATIONS OF PROTEOLYTIC ENZYMES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13, No 2
signed to press 30 Mar 76 pp 323-327

TSYPEROVICH, A. S., and MISHUNIN, I. F., Institute of Biochemistry,
Academy of Sciences UkrSSR, Kiev

[Abstract] Regeneration of silver from light-sensitive materials and its restoration to the Soviet economy is termed a task of national importance: silver is widely used in the electronics industry and in radio-engineering, and a substitute for it is still not possible. Increasing demand for silver is further depleting the already limited available stores. The USSR has been able to restore to production no less than 50% of the silver required in processing of films. Study is reported of the action of preparations of proteolytic enzymes from *Streptococcus griseus*, *Aspergillus oryzae*, *Asp. awamori*, *Asp. flavus*, and, also trypsin and alpha-chymotrypsin, on photogelatins. The gelatin was most intensely hydrolyzed by the *Str. griseus* preparation; in 24 hrs it split up to 20% of the peptide bonds, while *Asp. oryzae* and *Asp. flavus* preparations respectively split 10% and 8% of the peptide bonds. The *Str. griseus* preparation was 8 to 15 times more thorough than trypsin and chymotrypsin. Figures 4; Table 1; References 19: 14 Russian, 5 Western.

USSR

UDC 576.809.53

EFFECT OF DIFFERENT SULFUR COMPOUNDS ON THE GROWTH OF ENDOMYCOPSIS FIBULIGERA 21 and BIOSYNTHESIS OF GLUCOAMYLASE

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13, No 2,
signed to press 13 Aug 76 pp 281-285

VOLKOVA, L. D., YEGOROV, N. S., and YAROVENKO, V. L., All-Union Scientific Research Institute of Fermentation Products

[Abstract] Earlier work (by Hattori) has indicated the inability of two strains of *Endomyces* sp and *Endomycopsis fibuliger* yeast to utilize inorganic sulfur; these yeasts grew only on media containing aminoacids and tripeptide of glutathione as the sulfur source. The literature does not report the relative effect of sulfur sources on the formation of glucoamylase by members of the *Endomycopsis* genus hence the authors have studied the capacity of the title yeast to utilize sulfur-containing compounds in their biosynthesis of glucoamylase. The sulfur sources were

Na_2SO_4 , Na_2SO_3 , $\text{Na}_2\text{S}_2\text{O}_5$, Na_2S , thiourea, DL-methionine, L-cysteine, L-cysteineHCL, L-cystine, and glutathione (15 mg/l sulfur). The *E. fibuligera* 21 (in confirmation of Hattori's work) did not utilize the inorganic sulfur, or thiourea but did grow on the sulfur-containing aminoacids and glutathione. The best source of sulfur for the yeast synthesis of glucoamylase was the methionine; cysteine was also highly productive. Sulfur deficiency leads to competition between the construction and energy metabolism of the yeast, since the sulfur enters the structure of the cellular proteins and in the makeup of cellular enzymes. The glucoamylase activity of the strain is apparently involved in normal mycelial growth, and in sulfur deficiency the yeast displays shortened hyphas. Figures 2; Table 1; References 9: 1 Russian, 8 Western.

USSR

UDC 576.809.51

INHIBITION OF GROWTH OF CANDIDA UTILIS YEAST BY PRODUCTS OF METABOLISM
DURING CONTINUOUS CULTIVATION

Moscow PRIKLADNAYA BIOKHIKIYA I MIKROBIOLOGIYA in Russian Vol 13, No 2,
signed to press 12 May 76 pp 265-270

SHKIDCHENKO, A. N., and SHUL'GA, A. V., Institute of Biochemistry and
Physiology of Microorganisms, Academy of Sciences USSR, Pushchino

Abstract In this work the authors have used *Candida utilis* 405 IBFM yeast produced by the collection culture laboratory of their institute. Their purpose was to examine the action of metabolites of the yeast during continuous cultivation in a chemostat. The continuous cultivation was carried out in the ANKUM-2 apparatus in a synthetic medium by a method previously described (Shkidchenko, 1975). Modification of the concentration of glucose, as the source of carbon, was employed to limit the rate of growth. The specific rate of growth of the microorganisms in the presence of metabolism products is described by the equation of Mono-Ierusalimskiy (Ierusalimskiy, et al., 1965). The cellular metabolism products accumulated by the yeast inhibited growth of the culture. The inhibiting effect rose with increase in concentration of the biomass under experimental conditions, inhibition by the metabolites replaced inhibition by glucose concentration limitation. When the products of metabolism were fractionated, only one of the fractions, which contained low-molecular products of cellular metabolism, was found to decrease, by a factor of five, the respiratory activity of the yeast. Figures 2; Table 1; References 19: 16 Russian, 3 Western.

USSR

UDC 576.8.095

METHANE FERMENTATION OF THE FODDER YEAST STILLAGE

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 39, No 2, Mar/Apr 77,
signed to press 31 May 76 pp 156-159

KOSHEL', M. I., SKIRSTIMONSKIY, A. I., DEMCHINSKAYA, L. A., YATSYUK, M. V.,
and KELLER, B. N., Ukrainian Institute of Alcoholic Beverages

Abstract Utilization dynamics of organic substances present in the molasses stillage by fermenting methane-producing bacteria and the end products of this fermentation was studied. The aim of this study was to find the ways of enriching the stillage with fodder protein, particularly with B₁₂ vitamins, and to establish biological treatment methods for by-products of the yeast industry. Reducing substances, amino acids, nonvolatile carboxylic acids and betaine were utilized most extensively by fermenting bacteria during the first four days of fermentation. Maximum amount of gases, especially methane, carbon dioxide and hydrogen, was also formed during the same period. During the next fermentation time period, more methane and less CO₂ and H₂ was produced. The concentration of B₁₂ reached its maximum after 12-16 days of fermentation. The stillage fermentation by the methane-producing bacteria and increase in the concentration of B₁₂ can be intensified by adding of different substances containing reducing compounds, amino acids and nonvolatile carboxylic acids. Figures 5; References 19: 12 Russian, 7 Western.

USSR

UDC 634.0.863.002.5

AUTOMATIC METERS OF WORT VOLUME IN HYDROLYSIS PLANT

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 4,
1976 pp 23-24

OZNOBIKHIN, V. G., chief engineer, Lobnya Hydrolysis Plant

Abstract Operational monitoring of hydrolysis plant intermediates with existing diaphragm type integrating flow meters is difficult or impossible: this is due to contamination or abrasive wear of diaphragms. New designs of flow meters include an automatic flow meter which was developed and tested at the Lobnya Hydrolysis Plant in the brewing department on the buffer vat. The flow meter is calibrated from the known volume of the buffer vat. In half-year tests, the automatic flow meter worked reliably (without shutdown for repair or cleaning) and gave fairly precise indicators. Figure 1.

USSR

UDC 634.0.863:331.876

1975 RESULTS AND 1976 GOALS AT TAVDA HYDROLYSIS PLANT

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 4, 1976 pp 13-14

KOLIK, I. L., director, Tavda Hydrolysis Plant

Abstract Workers at the Tavda Hydrolysis Plant made 3.6 times more feed yeasts and marked a 62.4 percent gain in labor productivity in the Ninth Five-Year Plan. Its last year was taxing to workers since more than 30 percent of wornout hydrolysis units had to be replaced. In the first quarter of 1975, central feed tubes were installed at 11 hydrolysis units (37 m^3 in volume each). Well-defined monitoring of the units helped increase the yield of reducing agents and shortened unit cycle time by 20 min. The yield of yeasts from treated reducing agents was 44.4 percent (compared to 41.8 percent in 1974). As to goals in 1976, the hydrolysis shop must be redesigned and six hydrolysis units made of AT-3 titanium alloy installed. Operating the units must be made automatic. More than 10,000 tons of lysine-enriched yeasts is to be processed. Preparatory work in arranging for premix production will be done. A new distillation shop will be put in service and distilled ethanol will be readied for certification for the Emblem of Quality. Work will go on in preparing the conditions of bio-oxidation of post-yeast spent liquor. Commitments in the first year of the Tenth Five-Year Plan are: to make 150,000 rubles' worth of finished products above the plan (200 tons of feed yeasts and 12,000 decaliters of ethanol); to raise yields of reducing agents from one run, 1950 kg (the plan has 1880 kg) and yeasts from treated sugar, by 44.5 percent (the plan has 44 percent); to raise crude protein content in feed yeasts to 51 percent; to increase labor productivity 0.5 percent over the plan.

USSR

UDC 634.0.863.5:663.14.038

COEXISTENCE OF YEAST SPECIES IN CONTINUOUS CULTIVATION

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 4, 1976 pp 9-12

FURYAYEVA, A. V., FILIPPOVA, G. I., and GLADCHENKO, A. M., engineers, Institute of Physics imeni L. V. Kirenskiy, Siberian Division, Academy of Sciences USSR

Abstract Undesirable mixing of yeast microflora in continuous cultivation of mixed culture led to a study to find why microorganisms coexist in a flow. Yeasts *K. scottiae* Kr-9 and *K. tropicalis* 29-10 were selected. Used

at the same time were the strains *K. mycoderma* Sh-1-F and *K. tropicalis* isolated from plant inoculators. Mixed cultures were grown in a chemo-stat in limited sugar access at a cultivation rate $D = 0.34 \text{ hr}^{-1}$, in a 100 ml yeast-growing unit, with a magnetic mixer and thermal regulation. Cultivation of the mixed culture of yeasts *K. scottia* Kr-9 and *K. tropicalis* 29-10 in a chemostat on glucose at 38°C and pH 3.2 was accompanied by displacement of yeast *K. scottia*. It was found on a model medium similar in sugar composition to the production medium that coexistence of plant strains at yeast enterprises can be based on the ability of different species simultaneously to utilize constituents of a complex substrata, but at different growth rates. Figures 4; Table 1; References: 13 Russian.

USSR

UDC 634.0.863.5.002:663.033:65.011.56

AUTOMATIC CONTROL OF SALT DEPARTMENT

Moscow GIDROLIZNAYA I LESOKHIMICHESKAYA PROMYSHLENNOST' in Russian No 4, 1976 pp 5-7

TREGUB, V. G., candidate of technical sciences, GORODENSKAYA, V. YA., and VEKLICH, N. P., engineers, Kiev Technological Institute of the Food Industry

Abstract Fluctuations in phosphorus and potassium concentrations in batch mixers in most hydrolysis-yeast plants are 25 percent of nominal concentrations. Mixing solutions at the right concentrations requires automatic monitoring of the salt department. First, monitoring includes matching the productivities of the salt and neutralization departments, then, determining the dose of dry salts. From a monitoring criterion derived, an algorithm of automatic control of department performance was drawn up. The algorithm was checked in full-scale conditions at the Kiev Hydrolysis Plant. Using prepared solutions, mixer downtime was lowered from 30 hr/day to 5 hr/day, for a given department productivity. Figures 4.

Industrial Toxicology

USSR

UDC: 547.271.313.2-099:547.425

USE OF CYSTEINE IN THE TREATMENT OF ACUTE METHYL BROMIDE POISONING

Kiev VRACHEBNOYE DELO in Russian No 4, Apr 77 pp 124-126

BEZUGLYY, V. P., MIZYUKOVA, I. G., BAKHISHEV, G.N., and AFANAS'YEVA, YE. A., Kiev, All-Union Scientific Research Institute for Hygiene and Toxicology of Pesticides, Polymers and Plastics, Ministry of Health, USSR

Abstract The results of studies of the specific means of treatment of acute methyl bromide poisoning have shown that one of the sulfur-containing acids--cysteine--has good protective and therapeutic activity both with peroral, and with subcutaneous, administration to animals. This report presents a description of two cases of acute methyl bromide poisoning in which the patients were given known symptomatic medicines plus free cysteine. Both patients recovered.

USSR

UDC: 615.917:547.549-099-07

CLINICAL ASPECTS OF ACUTE COMBINED INTOXICATION WITH DINITROORTHCRESOL (DINOC) AND CARBOLINOLEUM

Kiev VRACHEBNOYE DELO in Russian No 4, Apr 77 pp 126-128

KLEYNER, A. I. and SONKIN, I. S., Khar'kov Scientific Research Institute for Labor Hygiene and Occupational Diseases

Abstract A case study is presented of combined acute intoxication with dinitroorthocresol and carbolinoleum. One peculiarity of the clinical manifestations was the development of a clear allergic state in the form of dermatitis, arthralgia, lymphadenopathy and myocarditis against a background of severe hyperthermia. This unique clinical picture is explained by the toxicologic peculiarities of the substances involved considering their combined effect, resulting from a sharp increase in oxidative processes, depression of phosphorylation processes and sensitization of the organism, leading to severe disorders in tissue metabolism, hyperthermia, formation of denatured tissue proteins and subsequent autosensitization.

USSR

UDC: 613.62:616.1-057

THE STATUS OF THE CARDIOVASCULAR SYSTEM IN VISCOSE PRODUCTION WORKERS

Kiev VRACHEBNOYE DELO in Russian No 4, Apr 77 pp 113-116

GUL'KO, S. N. and PIKUL'SKAYA, A. F., Candidates of Medical Sciences, Occupational Disease Clinic, Kiev Medical Institute

Abstract Clinical-laboratory and instrumental examinations were performed on workers in long-term contact with carbon disulfide under the conditions of viscose production. The subjects included 39 women and 14 men ranging in age from 31 to 55. The studies showed variations in blood pressure, functional changes in the vessels of the fundus oculi, radiographically deep shading of the aorta, elongation of its arc and expansion. Biochemical studies confirm a statistically reliable increase in the content of total, esterified and free cholesterol, phospholipids and β -lipoproteins in the blood. The authors report limitation in the blood supply to the myocardium, particularly the left ventricle, resulting from sclerotic damage of the coronary vessels. Persons with even nascent atherosclerosis should therefore not be permitted to work in viscose production. Tables 2; References: 13 Russian.

USSR

UDC: 613.633:542.978

INFLUENCE OF CONDITIONS OF LABOR ON THE HEALTH STATUS OF WORKERS WITH ATMOSPHERIC METAL CORROSION INHIBITORS

Kiev VRACHEBNOYE DELO in Russian No 4, Apr 77 pp 121-124

PAUSTOVSKAYA, V. V., Senior Scientific Staff Worker, KRASNYUK, Ye. P., doctor of medical sciences, ONIKIYENKO, F. A., Senior Scientific Staff Worker, and VASILYUK, L. M., Kiev Scientific Research Institute for Labor Hygiene and Occupational Diseases

Abstract A study was made of the health status of workers in contact with metal corrosion inhibitors such as cyclohexylamine chromate and carbonate, monoethanolamine, etc. The hygienic studies showed that the concentration of vapors in production areas exceeded the maximum permissible concentration by up to 5 times. Animal experiments and studies of the condition of health of workers (454 human subjects) were performed. The results indicated changes in the status of the myocardium in a significant percentage of the workers. Functional disorders of the central nervous system were also detected. Pathology of the hepatobiliary system in the form of chronic hepatitis of hepatocholecystitis was also detected. Table 1; References: 9 Russian.

USSR

UDC: 616.133.33-004.6.613.644

INFLUENCE OF PRODUCTION FACTORS ON THE DEVELOPMENT OF CEREBRAL
ATHEROSCLEROSIS IN THE WORKERS OF A METHANOL PLANT

Kiev VRACHEBNOYE DELO in Russian No 4, Apr 77 pp 109-113

PANCHENKO, YE. N., NALCHA, I. F., DZYUBA, N. I. and LUK'ANOVA, N. P.,
Department of Nervous Diseases, Voroshilovgrad Medical Institute

Abstract A study of the hygienic characteristics of labor at a methanol plant shows that in many shops the level of carbon monoxide and methanol vapor is high. The authors examined 104 workers involved in the production of methanol at the Severodonetsk Chemical Combine. After detailed study of the hygienic conditions of labor, the subjects were divided into four groups by occupation. The clinical examinations showed that almost all workers who came in contact with the toxic substances suffered from headaches. In some workers, they were combined with dizziness and dimming of vision. The neurological status of the patients showed prevalence of asthenic-vegetative symptoms: tremor of the lids and fingers, hyperhydrosis and variations in dermographic reaction. Biochemical studies showed deviations characteristic for atherosclerosis. These changes were most clearly expressed among the groups of workers most heavily exposed to the chemical factors. All of this indicates that the nervous-vascular disorders discovered in the methanol plant workers result from cerebral atherosclerosis. Tables 2; References: 16 Russian.

USSR

UDC: 615.227.4.015.42:613-008.931

STUDY OF THE PRIMARY EFFECT OF THE ACTION OF CARCINOGENS (ACTIVITY AND
ISOENZYME COMPOSITION)

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, 1977
pp 17-19

KHODOSOVA, I. A., BOZHKOVA, V. M., AVERTSEV, S. A., and OLENOV, YU. M.,
Laboratory of Genetics of Tumorous Cells, Institute of Cytology, Academy
of Sciences USSR, Leningrad

Abstract One problem arising in the study of the primary effect of chemical carcinogens is the question as to whether there is a correlation between carcinogenic properties of chemical agents and the direct effect of their action on the activity and isoenzyme composition. Therefore, the influence of various carcinogens on the activity of identical enzymes in

muscle tissue and the effects of carcinogens on the activity of enzymes in tissues which are and are not targets for them is compared. It is shown that various carcinogens generally influence the activity of a given enzyme in a given tissue in a similar manner. This follows from the data produced by the authors on the effects of carcinogens (polycyclic hydrocarbons) on the activity of certain enzymes in a culture of primary explantate of new born rat tissue. The nature of the change in the activity of the enzyme under the influence of a carcinogen is determined by peculiarities of differentiation of the target tissue. Various carcinogens cause similar changes in enzyme activity in a given target tissue. The nature of changes of activity of the enzymes under the influence of the carcinogens in various target tissues is determined by peculiarities of tissue differentiation. The changes in activity and isoenzyme composition under the influence of carcinogens does not correlate with their carcinogenic activity as concerns the tissue in question and, apparently, results from the reaction of the tissue to the nonspecific damaging effect of the carcinogen. Figures 2; References 5: 3 Russian, 2 Western.

Inventions and Discoveries

USSR

UDC 615.385.1.014.413

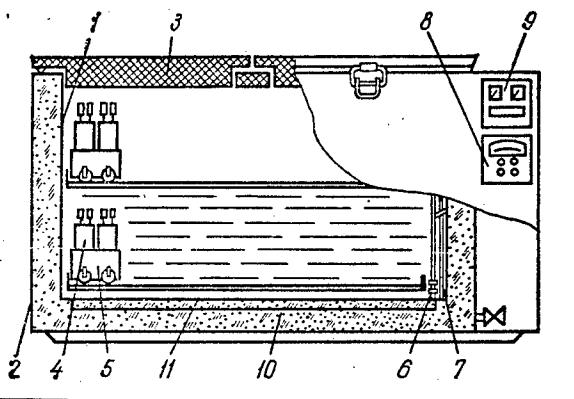
ERYTHROCYTE STORAGE IN LIQUID NITROGEN VAPORS

Moscow PROBLEMY GEMATOLOGII I PERELIVANIYA KROVI in Russian Vol 22, No 3, Mar 77 signed to press 11 May 76 pp 50-52

FEDOROVA, L. I., AGRANENKO, V. A., professor, POLYAKOVA, L. P., IVASHKOV, V. I., and KOMAROV, L. S., Section of Blood Preservation and Transfusion Science, Central Institute of Hematology and Blood Transfusion, Ministry of Health USSR

Abstract The authors state that the theory of blood preservation by freezing, and the use, in practice, of frozen erythrocytes, are being broadly developed (Vinograd-Finkel' et al; V. A. Agranenko, et al.) in the Soviet Union; access to cryoagents, e.g., liquid nitrogen, is limited in the USSR. The authors' institute, together with the Scientific Research Institute of Helium Technology, has constructed a new cryogenic chamber "K-1000" with an automatic liquid nitrogen feeder, in which the necessary temperature (not above -150°) is maintained with the vapors of liquid nitrogen. This chamber is a rectangular vessel with two lids in the upper part. Within, there are two "carts" which move on rails, and which are designed to position containers and bioproducts in them. The hydraulic capacity of the chamber is 1300 l. (See Figure). The powder-vacuum insulation of the walls of the chamber protected against heat loss. About 400 l of liquid nitrogen is used in the chamber; loss per day is 10-12%. The chamber successfully maintained blood in the vapors of the liquid nitrogen, in a first class physiological state.

Cross-section of K-1000



Key:

1. chamber interior
2. exterior casing
3. lid
4. container
5. cart
6. rod of the level sensors
7. rod of the temperature sensors
8. control block
9. signal block
10. insulation
11. adsorbent

Microbiology

USSR

UDC 616.981.455-022.14-092.9-07:616.155.3-008.13

CHANGE IN PHAGOCYTIC ACTIVITY TOWARD THE TULAREMIA AGENT IN HIGHLY SENSITIVE ANIMALS DURING A MIXED INFECTION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 7 May 76 pp 86-90

DUNAYEVA, T. N. and SHLYGINA, K. N., Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR, Moscow

Abstract Dunayeva found earlier (1970, 1972) that, in the presence of a mixed infection, tularemia persists longer in animals highly sensitive to that disease, while the intensity of the septicemia is decreased. She was not able to clarify the reason for this effect. The authors have investigated the ingestive and digestive function of blood neutrophils in common field mice and white mice infected with pseudotuberculosis, and in guinea pigs infected with salmonella; they examined the opsonophagocytic reaction (OPR) with homologous and tularemia microbes by a method they described earlier (date not given). The mixed infection in the highly sensitive animals increased the ingestive and digestive activity of the neutrophils. Activation of the non-specific protective factor of phagocytosis causes a deviation in the typical course of tularemia, evoking extended duration of the disease, a decrease in intensity of septicemia, and, sometimes, a rise in threshold of susceptibility associated with destruction of small doses of the microbe in the phase of adaptation. The period of manifestation of the inhibitory action coincided with that of phagocytic activity increase. Table 4; References 10: 9 Russian, 1 Western.

USSR

UDC 576.8.07

EXAMINATION OF THE RELIABILITY OF BIOCHEMICAL TESTS USED IN THE PATHO-TEC SYSTEM FOR IDENTIFICATION OF BACTERIA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 20 Apr 76 pp 42-46

KHOMENKO, N. A., Moscow Institute of Vaccines and Sera imeni Mechnikov

Abstract The author acknowledges the great attention devoted outside the USSR to the development of rapid methods for identification of enterobacteria; these employ a battery of the most essential differentiating tests for establishing identity of the bacteria. He has examined the Patho-Tec system of reagents (Rapid I-D System, Warner-Lambert Co., N. Y., USA) describing it as technologically simple, having the advantage over usual biochemical tests in its rapid response, small expenditure of time

in setting up the reactions, and economy of agents and laboratory vessels. Production of reagents for accelerated methods of bacteria identification is lacking in the Soviet Union. Some of these methods are extremely convenient and to be recommended for work under field conditions and at the time of outbreaks. Development of Soviet research to devise such rapid identification systems is termed extremely important. Table 1; References 16: 3 Russian, 13 Western.

USSR

UDC 576.851.553.098.31

SOME PATTERNS IN THE FORMATION OF PROTEOLYTIC ENZYMES BY VARIOUS STRAINS OF CL. BOTULINUM TYPE F

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 4, Apr 77 signed to press 21 Jun 76 pp 125-129

YEGOROVA, YE. N., ISPOLATOVSKAYA, M. V., LEVDIKOVA, G. A., and CHULKOVA, I. F., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

Abstract The proteolytic system of Cl. botulinum Type F, which was found much later than the other Types (A,B,C,D), has not been studied adequately. Hence the authors became interested in the properties of the proteinases in a culture of the agent, and in their possible role in activation of the homologous protoxin. Cl. botulinum Type F, strains 470,200, 76 and 55, and strains Eklund and Craig were examined. The first four strains were able to split casein; the latter two were "non-proteolytic" and were weakly toxigenic. A difference was found in the strains with respect to capacity to activate trypsin, depending on age of the culture. Weakly toxigenic strains were activated during the entire period of culturing, the toxigenic only in the early periods of the culturing. The most favorable media for production of the proteinases were skim milk and medium No 142 based on a casein hydrolysate. The repeatedly-purified proteinase of Type F splits, in addition to casein, azokol, and, also, p-toluenesulfonyl-L-arginine-methyl ether; optimum pH for enzyme action is 6.5-7.0; activity is inhibited by EDTA; activity is increased by cysteine and dithiotreitol. Molecular weight is about 60,000. Figures 2; Table 1; References 9: 1 Russian, 8 Western.

USSR

UDC 576.858.73.098.396.332

CHARACTERISTICS OF 24S and 36S VIRUS-SPECIFIC RNAs IN NEWCASTLE DISEASE VIRUS-INFECTED CELLS

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press
18 Jun 76 pp 151-156

LUKASHEVICH, I. S., VARICH, N. L., and KAVERIN, N. V., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

Text - English language abstract supplied by authors/ The properties of 24S and 35S virus-specific RNAs of Newcastle disease virus were studied after denaturation. It was shown that 60-80% of 24S and 35RNA consisted of agglomerates of molecules of virus-specific 18S RNA. Undissociable upon denaturation 24S RNA contained mainly the same components as undenatured RNA and consisted completely of sequences of virus-specific 18S RNA. Undissociable 35S RNA contained no "heavy" heterogenous material present in the intact undenatured RNA and 75% of it consisted of sequences of 18S virus-specific RNA. Some sequences present in undissociable transcripts and subsequent formation of covalent bonds between transcripts as well as possible formation of "solid" transcripts of the adjacent genes are discussed. Figures 3; Tables 2; References: 12 Western.

USSR

UDC 616.988.25-092.9

DYNAMICS OF REPLICATION OF INFECTIOUS WEST NILE VIRUS AND ACCUMULATION OF ITS ANTIGENS IN THE BLOOD AND BRAIN OF EXPERIMENTALLY INFECTED MICE

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press
14 Jul 76 pp 193-196

LAVROVA, N. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

Text - English language abstract supplied by author/ The appearance of the hemagglutinating (HA), complement-fixing (CF) and soluble (S) antigens and infectious virus in the blood and brain of suckling mice inoculated with various doses of West Nile virus was studied. The infectious virus was isolated from the blood and brains of mice as early as 24 hours after inoculation. Its titres increased in parallel in the brain and blood reaching maximum levels by the end of infection. The HA antigen was detected only in the brain at 2-3 days after inoculation. The CF antigen was detected in the blood in a low titre only in the terminal stage of infection; in the brain the CF antigen was detected within 24 hours after infection with a low dose and within 48 hours with a high dose. The S

antigen was isolated only from the brain tissue, and in higher titres after infection with a large dose. This may be associated with excess synthesis of the S antigen at a high multiplicity of infection. Figures 3; References 11: 7 Russian, 4 Western.

USSR

UDC 616.988.21-036.12-092.9

CHRONIC RABIES INFECTION IN MICE INOCULATED INTRACEREBRALLY WITH STREET VIRUS

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press
17 Sep 76 pp 147-151

GRIBENCHA, S. V., KOROLEV, M. B., and STEFANOV, S. B., Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences USSR, Moscow

Abstract While the clinical form of a chronic rabies infection in the natural state has not yet been described in the literature, the authors note that they have already found strains of rabies virus in nature which, upon brain administration to young mice, evoke a disease with a chronic course: they have also obtained similar results with another strain of street virus. In the current report they present data on a clinical form of chronic rabies and on the virological and morphological characteristics of this form of infection. Street viruses used were YAK strain, isolated from a 6 yr old boy who died of hydrophobia 103 days after foxbite; strain B from a man who died after a badgerbite; and strains ON-5, OV-5, OV-6, OVD-1, and OVD-2 described earlier (1974). The clinical form of rabies in mice, infected intracerebrally with the seven strains, took both an acute course, and a chronic course, lasting up to 55 days in the latter form. In all cases the disease was fatal. Chronic rabies was characterized by low production of infective virus during the disease period, with substantial accumulation of virus-specific antigen in the neuron cytoplasm. The number of these antigens was significantly higher than in the acute infection where high production of infective virus occurred. Electron-microscopic analysis of the features of morphogenesis of street virus in the chronic form of infection showed replication and accumulation (in the form of specific inclusions) of nucleocapsid bands without formation of a membrane, and a buildup of virions with the help of previously existing cell membranes. Variations in morphogenesis with the acute and chronic form of infection took place with the same strains of rabies virus, hence were not variations due to the strain or to a different degree of adaptation. The authors note the possibility that the abortive type of virus reproduction in vivo is characteristic also of other forms of chronic rabies infection and is one of the possible mechanisms of retention of the virus in nature. Figures 2; References 17: 10 Russian, 7 Western.

USSR

UDC 576.858.75.085.23

CHRONIC INFECTION OF HE LA CELLS WITH RESPIRATORY SYNCYTIAL VIRUS

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press
26 Apr 76 pp 142-147

YANKEVICH, O. D., and DREYZIN, R. S., Institute of Virology imeni
D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

Abstract The authors were the first (1975) to describe extended persistence of a respiratory-syncytial (RS) virus in the blood of patients with RS-viral disease. Finding no report on production of chronic RS-viral infection they have studied such an infection in a culture of HeLa cells (Bristol strain). The RS-virus (Long strain) was grown and titrated in the HeLa cell culture; infection titer was 10^7 TCD₅₀/ml. Twenty-one passages of HeLa-RS were carried out over 144 days; the chronically-infected cells did not differ in growth or proliferative activity from a control culture. Infection virus was found in the culture medium on the 7th and 14th day after inoculation. In the subsequent period, 3rd to the 21st passage, the infection virus could not be isolated from the HeLa-RS system by passage in a HeLa culture, but the specific antigen, revealed by immunofluorescence, was retained in 18-26% of the cells, six to seven days after cell plating. The content of infected cells was increased after treatment of the culture with 5-iodo-2-desoxyuridine. Passage of cells with HeLa-RS in a medium containing specific antigens did not affect the relative content of the cells which contained the RS-viral antigen. The cells with HeLa-RS manifested moderate resistance to superinfection with RS-virus and retained sensitivity to adenovirus type 3. Eight of 9 clones studied were infected. Interferon was not found in the system. Tables 4; References 16: 5 Russian, 11 Western.

USSR

UDC 578.6

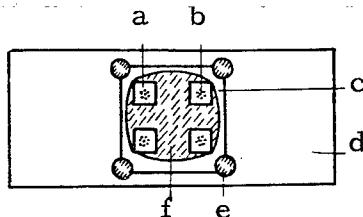
CHAMBER FOR DEVELOPMENT STUDIES OF BACTERIA IN DIFFERENT MEDIA WITH
MICROSCOPE

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 39, No 2, Mar/Apr 77,
signed to press 14 Dec 76 pp 231-232

GASHINSKIY, V. V. and VOYTSEKHOVSKIY, V. G., Kiev Medical Institute

Abstract The chamber consists of four agar (a) rectangles (2x2x0.5-1.0 mm) placed on a slide (d) at a distance of 6-8 mm between them and covered with a sterile cover glass (c). Agar blocks could be of any composition. Each agar rectangle is seeded (center, b) with a desired culture before

the cover glass is put in place and fixed to the slide by paraffin (e) at each corner. A microscope is used for observation and photographing the culture development during its initial and consequent stages when different



media (antibacterial preparations, bacterial metabolites, nutrients, etc.) are added to the chamber. Using a thin capillary pipette the prepared medium is introduced into the chamber in such an amount as to surround with it each agar block (f). The chamber is kept in a moist Petri dish, in order to avoid drying of the medium while incubation takes place in a thermostat. The added medium diffuses into agar blocks and influences the culture under study. Each phase of the development of bacteria is photographed and the obtained pictures are compared with the preceding stage. The entire life cycle (spore \rightarrow vegetative cell \rightarrow spore) of bacteria can be studied in this manner. Figures 1; References 12: 11 Russian, 1 Western.

USSR

UDC: 632.4:633.11:582.285.2

A PROBABILISTIC MODEL OF SEASONAL PROGNOSIS OF WHEAT STEM RUST

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 11, No 2, 1977 signed to press 18 Nov 73 pp 155-161

STEPANOV, K. M., TEREKHOV, V. I., SANIN, S. S., AFONIN, S. P. and SOLODUKHINA, L. D.

Abstract This report presents a simplified model of the growth of a population of the fungus *Puccinia graminis* f. sp. *tritici* Eriks. et Henn. on winter wheat with and without the use of fungicide. In the model of the epiphytoty suggested, the vegetation period is divided into intervals, the number of which is equal to the number of primary uredogenerations. The duration of the first uredogeneration is equal to the time interval from primary infection to the appearance of the first daughter uredopustules. The beginning of the next main uredogeneration is considered the first day after appearance of the daughter inoculum, etc. It is assumed that this cycle occurs in 10 days. Versions of epiphytoties and strategies for their control presented in this article demonstrate the possibility of an analytic approach to the problem of plant protection based on mathematical simulation, avoiding repetition of orthodox recommendations. The algorithm presented considers the most important information concerning the problem, but does not consider variations in fungicidal action due to environmental conditions, and the conditions of production of the daughter inoculum are oversimplified. Figures 2; References 6: 4 Russian, 2 Western.

Molecular Biology

USSR

UDC: 633.854:78:632 938:632.4+632.5+632.7

WILD SPECIES OF HELIANTHUS AS A GENE POOL OF IMMUNITY TO DANGEROUS DISEASES AND PESTS

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 11, No 2, 1977
signed to press 8 Jun 76 pp 149-155

KRASNOKUTSKAYA, O. N., PLATOVSKIY, V. P., SLUSAR', E. L. and SHKUROPAT, Z. Ya., All-Union Institute for Oil Crops, Krasnodar

Abstract The authors studied wild species of helianthus of North American origin, which can be used as initial forms for the production of hybrids with group immunity to the most important pathogens in the USSR. The phytopathologic evaluation was performed using a collection of wild forms of sunflower of North American origin maintained at the Institute. Evaluation of the wild forms of sunflower as to resistance to disease was performed both by artificial infection and under natural conditions. It was found that all of the perennial wild forms combine high resistance to 7 pathogens of the most important diseases and two pests. The polyploid group, which has group immunity, is of greatest interest. Absolute immunity to 6 pathogens was established for several species of the perennial hexaploid group: *H. tuberosus*, *H. rigidus*, *H. subcanescens* and 5 pathogens in the tetraploid *H. tomentosus* and hexaploid *H. macrophyllus*, to 4 pathogens in the tetraploid *H. scaberimus*. Combined resistance (to 4 pathogens) was also discovered in wild forms of helianthus among the perennial diploids: *H. mollis*, *H. giganteus*, *H. argialis*. The wild species of helianthus thus represent a gene pool from which genes imparting resistance to the most important disease pathogens can be extracted in selective breeding of sunflowers for group immunity. Tables 3; References: 3 Russian.

USSR

UDC 577.23.001.57

AN ATTEMPT AT COMPUTER SIMULATION OF THE EVOLUTION OF THE NUCLEOTIDE SEQUENCE OF DNA

Moscow ZHURNAL OBSHCHEY BIOLOGII in Russian Vol 38, No 2, Mar/Apr 77
signed to press 4 Jun 76 pp 198-203

MEDNIKOV, B. M., Moscow State University, and MENSHTKIN, V. V., Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

Abstract It is of interest to determine just which specific features of the evolution of genotypes lead to the development of a discrete hierarchical structure. It is expedient to apply the method of electronic

computer simulation in such studies. The most suitable model in such cases is that of a system in which the time and state are defined by discrete sets, each subsequent state of the system not being defined unambiguously by the preceding state, but rather only the probability of some transition being given (stochastic model). Two factors essentially facilitate the construction of such a model. The first is the principle of the single tree of all life on earth. Genes do not develop *de novo*. All of the tremendous store of information contained in a gene has arisen as a result of repeated copying and continuous mutation from the proteogene of the first living matter, extending down to man today. The second factor, equally important is that at the molecular level, convergence on the large scale is vanishingly improbable. Based on these principles and the Monte Carlo method, A BESM-6 computer program is written to simulate the evolution of the DNA nucleotide sequence. Satisfactory simulation of the distribution of DNA is achieved only when the model imitates the main principle of Darwinian evolution--divergence due to extinction of intermediate forms as a result of competition between close relatives. Figures 3; References 10: 5 Russian, 5 Western.

USSR/USA UDC: 616-006-02.615.277.47-7:616-006-008.939.633.2:576.858.
6.098.396.332

DIFFERENCES AND SIMILARITIES IN THE REGULATION OF RNA IN TUMORS INDUCED BY CHEMICAL COMPOUNDS AND RNA- AND DNA-CONTAINING VIRUSES

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, 1977
pp 69-74

SHEARER, R. W., USA

Abstract Cancer represents disruption of gene regulation. It is therefore necessary to determine the changes occurring in its earliest stages, as well as those constantly encountered in the malignant transformation. Changes must be sought in the regulatory genes, capable of causing reprogramming of synthesis of various normal proteins as occurs in tumorous tissue. The production of proteins characteristic for the earliest stages of development is a common feature of many malignant tumors. One early and irreversible effect of chemical carcinogens as they act on rat liver is a loss of the mechanism of selection which determines which of the T-DNA transcripts will be transported to the cytoplasm, leading to the presence of RNA of all three genes which were transcribed in the nucleus. This effect can be most clearly seen by the method of competitive hybridization. Results are presented from comparison of nuclear and cytoplasmic RNA of kidneys and an induced polyoma tumor as to their ability to compete with labeled tumor RNA. The loss in selectivity of RNA transport characteristic for tumors induced both by chemical carcinogens and by viruses is apparently necessary for malignization. However, depression of cellular genes cannot be considered obligatory, since it is discovered only in viral tumors, not in tumors induced by chemical carcinogens. Figures 7; References 13: 1 Russian, 12 Western.

USSR/USA

UDC: 616-006.6-07:616-006.6-008.939.633.2-074

ANALYSIS OF THE METABOLISM OF TRANSFER RNA IN TUMOROUS TISSUE AS AN APPROACH TO THE DIAGNOSIS OF CANCER

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, 1977
pp 80-88

VELKS, T. F. and BOREK, E., USA

Abstract The structure and functions of tRNA are briefly outlined. The various ways in which tRNA participates in the control processes within the cell are described. The authors hypothesize that since, in addition to alkylation of DNA, generally accepted as causative in chemical carcinogenesis, chemical alkylating agents *in vivo* also alkylate tRNA, in tumor cells incorrect enzymatic methylation of tRNA or DNA may occur. The modification of tRNA in tumor cells and the excretion of the decomposition products of tRNA are described. The authors believe that a systematic study of modified purines and pyrimidines in the blood and urine of oncologic patients, using more sensitive methods than those used to date, might be very useful; such a program has been begun at the National Cancer Institute. Results are presented from analysis using two markers following treatment of patients with Burkitt's lymphoma by combined chemotherapy to the point of practically complete disappearance of the tumors. It was found that the excretion of N², N²-dimethylquanosine and β -aminoisobutyric acid decreased as the tumors shrank. The authors call for further studies. References: 20 Western.

USSR

UDC: 616-006-018.1-07:616-008.931.074

CHANGES IN ISOFORMS OF CERTAIN ENERGY METABOLISM ENZYMES AS AN INDICATOR OF RESTRUCTURING OF THE EXPRESSION OF THE GENOME OF A CELL IN THE PROCESS OF TRANSFORMATION BY AN ONCOVIRUS

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, 1977
pp 19-22

AGEYENKO, A. I., VITORGAN, YU. YE. and GOROZHANSKAYA, E. G., Moscow Oncological Institute imeni P. A. Gertsen; Oncological Scientific Center, Academy of Medical Sciences, USSR, Moscow

Abstract An analysis is presented of the kinetics of changes of isoenzyme spectra and the general activity of the following enzymes involved in energy metabolism: hexokinase, lactate dehydrogenase and malate dehydrogenase in the process of viral carcinogenesis. The test systems used were

fibroblasts of rat embryos, infected with an oncogenic version of the human adenovirus type 12 (Al2) and human infectious adenovirus type 6 (A6). The material presented indicates that the effect of the infectious and oncogenic viruses causes restructuring in the isoenzyme spectra of the enzymes of energy metabolism both in the nucleus and in the cytoplasm. Thus, based on the cross analysis performed, changes in the enzymes in the soluble fraction of the nucleus and in the cytoplasm of the rat embryo tissue cultures were detected under the influence of the DNA-containing oncovirus and Al2 sarcoma cultures, indicating an increase in the glycolytic processes characteristic for malignization of tissue. References 7: 5 Russian, 2 Western.

USSR

UDC 612.822.3.087

BINOCULAR INTERACTIONS IN THE STRIATE CORTEX OF RATS EXPOSED TO RANDOM LIGHT STIMULI

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 3 BIOLOGIYA in Russian, No 1, Feb 77 signed to press 26 May 75 pp 91-98

UDALOVA, G. P.

Abstract In development of extensive earlier work by V. L. Bianki and other Soviet physiologists, the method of evoked potentials (EP) was used in acute experiments to examine the features of the subject interactions in rats. A two-channel photostimulator was used for the photic stimuli. Two simultaneous series of random monocular stimuli of equal or different intensities were presented dichotically. It appeared that, when the random stimuli are applied, the character of the dependency of the EP, arising under monocular and binocular action, on the intensity of the stimulus--and, also, the effects of the binocular interaction, viz., the ipsilateral facilitation and depression--are fundamentally similar to those when defined stimuli are presented. It is suggested that manifestation of the one or other effect of binocular interaction depends on a number of factors, particularly on the ratio of intensities of the stimuli, the sequence of presentation, and on the level of interhemispheric asymmetry. A description is presented of the contrast of EP amplitudes, recorded in response to binocular action in symmetric sectors of the striate, as a function of the contrast in intensities of the random light stimuli. The relationships of the evoked potentials under the various conditions of the experiment are graphically portrayed. Figures 3: References 17: 16 Russian, 1 Western.

Pharmacology

USSR

UDC 615.281.8

COMPARATIVE STUDY OF THE ANTIVIRAL ACTIVITY OF RIMANTADINE AND BONAPHTHONE

Moscow VOPROSY VIRUSOLOGII in Russian No 2, Mar/Apr 77 signed to press
10 Aug 76 pp 223-228

IL'YENKO, V. I., PLATONOV, V. G., and KHOMENKOVA, I. K., All-Union
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Text - English language abstract supplied by authors/ The results of the study on toxicity and the antiviral activity of bonaphthone for developing chick embryos was demonstrated, the maximum non-toxic dose of bonaphthone being about $10 \mu\text{g}/\text{embryo}$, while for rimantadine it was above $1000 \mu\text{g}/\text{embryo}$. In white mice, however, the toxicity of these two drugs was approximately similar. The minimal single lethal dose for mice by the oral route was 400-500 mg/kg for rimantadine and bonaphthone, by the intraperitoneal route 65 mg/kg for bonaphthone and 125 mg/kg for rimantadine. Bonaphthone had a slight prophylactic activity protecting mice inoculated with A2/Bethesda/63 influenza virus. The index of effectiveness of bonaphthone was about 40%, that of rimantadine under similar experimental conditions over 90%. Bonaphthone had no therapeutic effect. It inhibited multiplication of A2/Hong Kong/68 influenza virus in the lungs of mice inoculated with minimal doses of the virus, but was inactive in case of infection of mice with A/Port Chalmers/73 virus. Thus, the comparative study of bonaphthone and rimantadine revealed no superiority of bonaphthone. Figures 2; Tables 5; References 15: 9 Russian, 6 Western.

USSR

UDC 616-006-018.1-092.9

ULTRASTRUCTURE OF "CILIATED CELLS" IN EARLY STAGES OF THEIR FORMATION IN
THE PROCESS OF CHEMICAL CARCINOGENESIS IN THE CENTRAL NERVOUS SYSTEM

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 72, No 4,
Apr 77 signed to press 19 Nov 76 pp 93-97

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Abstract/ Prior to this work the author had studied (1973) the ultra-structure of the mature "ciliated cells" which made up the first layer of a capsule forming around a pellet of DMBA implanted in one of the cerebral hemispheres or cerebellum of white rats; these cells, in all probability, participate in the entrapment and metabolism of the carcinogen. It is necessary to determine whether the ciliated cells are products of the

adventitia or are of hematogenous origin, Mardanova addresses that problem in this report, a study of the early stages of formation of the ciliated cells. In response to DMBA implantation in the right cerebral hemisphere of female white rats, precursors of the cells appear in the perivascular tissue within 12 hr; within 24 hrs they accumulate around the pill bed, and within 48 hrs a cellular border forms around the carcinogen. The cytoplasm of the cells is enriched with organelles; the main identifying feature of the cells in all periods of the experiment were lipoid inclusions in the cytoplasm of a polygonal form differing morphologically from lipids of usual macrophages. Within 48 hrs the cytoplasm of the ciliated cells develop long lancet-shaped spiculae with upright walls; macrophage cytoplasm develops only short, somewhat sinuous processes. The cells are described as a special type of giant cells which participate in the phagocytosis and catabolism of the carcinogen. Despite the specificity of the cells' ultrastructure it is not clear whether they are products of the vascular adventitia or of hematogenous origin. Figures 5; References: 5 Russian.

USSR

UDC 612.815.4

EFFECTS OF ORGANOPHOSPHORUS CHOLINESTERASE INHIBITORS GD-7 AND GD-42 ON SYNAPTIC POTENTIALS OF THE FROG SARTORIUS MUSCLE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 234, No 1, May/Jun 77
signed to press 27 Dec 76 pp 242-245

SKLYAROV, A. I., Institute of Evolutionary Physiology and Biochemistry
imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

Abstract The method of microelectrode leads was used to study the effect, on synaptic potentials of two organophosphorus inhibitors (OPI) GD-7 and GD-42. GD-7 (0-ethyl-S- β -mercaptoethyl methylphosphinate) has no charge in its molecule and can therefore penetrate through cell membranes and inhibit both extra- and intracellular CE. Its analogue GD-42 is a methylsulfomethylate, several thousands of times more active than GD-7, but the presence of a full positive charge on the sulfonium sulfur prevents penetration through cell membranes. The results of the studies indicated that GD-7 in a concentration of $2 \cdot 10^{-7} M$ and GD-42 in a concentration of $2 \cdot 10^{-10} M$ have no reliable influence on the time of rise and half drop in potentials of the terminal plate and amplitude of miniature potentials of the terminal plate. GD-7 at $2 \cdot 10^{-6} M$ and GD-42 at $2 \cdot 10^{-9} M$ increase the amplitude and duration of both factors, apparently only by inhibition of synaptic CE. GD-42 at $2 \cdot 10^{-8}$ - $2 \cdot 10^{-6} M$ increases the amplitude and length of both factors due to inhibition of synaptic CE, and also by some other, short-term mechanism, possibly as a result of changing the conformation of

the cholinoreceptors. Washing with GD-7 at $2 \cdot 10^{-6}$ M and GD-42 at $2 \cdot 10^{-9}$ - $2 \cdot 10^{-6}$ M causes no change in amplitude or length of the factors, indicating irreversible inhibition of synaptic CE. GD-7 and GD-42 at $2 \cdot 10^{-5}$ M irreversibly inhibit synaptic CE and have an irreversible inhibiting influence on the post synaptic membrane, influencing the structures located outside the post synaptic membrane. GD-7 and GD-42 at $2 \cdot 10^{-5}$ M also have presynaptic effects, increasing the frequency of the miniature potentials and decreasing the quantum composition of the terminal plate potentials. This influence is reversible and apparently results from the influence of these substances on the structures located outside the presynaptic membrane. References 10: 5 Russian, 5 Western.

USSR

UDC 575.24

MUTAGENIC EFFECTS OF N'-SUBSTITUTED DIHYDROURACILS AND THIOURACILS

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 12, 1976 signed to press 28 Jun 76 pp 16-21

PARONIKYAN, G. M., KALDRIKYAN, M. A., DARBINIAN, G. A., and TUMASYAN, E. A., Institute of Fine Organic Chemistry imeni A. L. Mndzhoyan, Academy of Sciences Armenian SSR

Abstract The results of studying mutagenic action of 22 newly produced dihydrouracils and thiouracils, synthesized as therapeutic preparations, are presented. The compounds synthesized belong to four homologous groups: first, N'-(4-alkoxybenzyl)-5,6 dihydrouracil; second, N'-(4-alkoxybenzyl)-5,6 dihydrothiouracil; third, N'-(4-alkoxybenzyl)-5-methyl-5,6 dihydrouracil; fourth, N'-(4-alkoxybenzyl)-5-methyl-5,6-dihydrouracil. The genetic activity of the new compounds is compared with that of uracil and 5-bromouracil, tested under identical conditions. The objects of the test were biochemical mutants Escherichia coli P-678, lacking in threonine, leucine, and vitamin B₁--and Actinomyces rimosus 222, lacking in lysine and sensitive to streptomycin. Mutagenic activity of the dihydrouracils and thiouracils on the biochemical mutants indicated that many of them possess mutagenic qualities and significantly surpass uracil and 5-bromuracil in this regard. Mutagenic activity was expressed in N'-(4-butoxybenzyl)-5,6-dihydrouracil and N'-(4-ethoxybenzyl)-5-methyl-5,6-dihydrouracil. Figure 1; Tables 2; References: 9 Russian.

USSR

UDC 615.285.7.025.1:547.562.332⁷.061:94-084.48

RESIDUAL ACTION OF DDT IN PREMISES OF RURAL COMMUNITIES IN AZERBAYDZHAN

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian
Vol 46, No 2, Mar/Apr 77 signed to press 30 Jun 75 pp 191-195

DROBOZINA, V. P., SUVOROVA, N. I., and BONDAREVA, N. I., Institute of
Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy
Ministry of Health USSR, Moscow

Abstract In the Azerbaydzhanian SSR, where *An. sacharovi* had acquired a resistance to DDT, a project was conducted according to WHO procedure in 1972 and 1974 in the Akhsuinskii, Agdashskii, and Sabirabadskii districts to determine the residual action of DDT (30% wetted powder and 25% emulsion) on various types of surfaces found in rural communities: adobe, wood (boards, plywood), oil-painted, or plastered. Low toxicity of both forms of DDT against local populations of *An. sacharovi* was established by experiment. Twenty-four hours after the DDT treatment, the death rate of freshly engorged female *An. sacharovi* mosquitoes did not exceed 59% after 1-hour contact with treated wall surfaces. Within 10 days the residual action of DDT decreased markedly and disappeared completely in 20 days, regardless of the type of surface treated. Tables 1; References 21: 16 Russian, 5 Western.

USSR

UDC: 616-006-092.9-085.277.3-07:616-008.931:577.152.313

ISOENZYME SPECTRA OF PHOSPHATASE AND NUCLEOSIDE PHOSPHOKINASE IN EXPERIMENTAL TUMORS UNDER THE INFLUENCE OF ANTITUMOR MEDICINES

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 3, 1977
pp 25-30

FILOV, V. A., TRET'YAKOV, A. V., RYAZANOV, YE. M. and MUKHLENOV, A. G.,
Institute of Oncology imeni N. N. Petrov, Ministry of Health USSR,
Leningrad

Abstract The authors studied the isoenzyme spectra of the basic bio-energetic enzymes (phosphatase and nucleoside phosphokinase) in tumors during the application of effective antitumor preparations. During effective therapeutic application of preparations of various chemical classes, rats of various strains with experimental tumors showed changes in the spectra of isoforms of phosphatase and nucleoside phosphokinase in extracts from tumor cells, the soluble fraction of the cells and the lysosomes. These changes depend on the strain of tumor and preparation used. Figures 7; References: 5 Russian.

Physiology

USSR

UDC 612.825.54

ROLE OF THE INHIBITORY AREAS OF RECEPTIVE FIELDS OF THE CAT VISUAL CORTEX
IN SPATIAL FREQUENCY FILTERING

Leningrad FIZIOLOGICHESKIY ZHURNAL SSR IM. I. M. SECHENOVA in Russian
Vol 63, No 2 signed to press 10 Sep 76 pp 202-209

GLEZER, V. D., DUDKIN, K. N., SHCHERBACH, T. A., and GAUZELMAN, V. YE.,
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Leningrad

Abstract Study of spatial frequency characteristics (SFC) of neurons of the visual cortex (VC) is an important step in an understanding of the mechanisms for recording images in the visual system. The authors have already suggested that the complex receptive fields of the VC execute a partial Fourier transformation and are, therefore, the neurophysiological substrate of the channels of spatial frequency found (Campbell, et al., 1968) in psychophysiological studies of the visual system. Neurophysiological studies and model experiments (Glezer) have shown that inhibitory processes play an important role in spatial frequency filtering. In this article the authors have examined the responses of the simple and complex receptive fields of the cat VC to individual bands of different bandwidth and to grids of differing spatial frequency. Masking of the inhibitory centers of the field leads to conversion of the field from a narrow-band filter of spatial frequency to a broad-band. Transition from a grid to an individual band has an analogous action. The field SFC measured by response computed on a time when the grids have moved through only a part of the field do not differ essentially. The authors describe the phenomenon of reciprocity which consists in the fact that responses to input and output of grids of different spacial frequency are in reciprocal relation to each other. These data indicate a definite role of inhibitory zones in the formation of the narrow-band SFC of the receptive field of the VC. Figures 6; References 15: 10 Russian, 5 Western (3 of these are by Glezer, et al.).

USSR

UDC 611.34:611.16)-08:612.014.47

INFLUENCE OF PRELIMINARY TRAINING FOR GRAVITATIONAL OVERLOADING AND OF EXPOSURE TO A SERIES OF EXTREME FACTORS ON THE INTRAORGAN VASCULAR BED OF THE INTESTINE

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 72, No 4, Apr 77 signed to press 23 Jun 76 pp 44-49

NIKITIN, M. V., Department of Normal Anatomy, First Leningrad Order of Labor's Red Banner Medical Institute imeni I. P. Pavlov

Abstract In recent years experiments in the area of space anatomy have continued to approximate the actual conditions which prevail during the stages of space flight. For example, study has been made of the influence of a number of extreme factors, following one after the other in a definite sequence (hypergravitation--hypokinesis; hypergravitation--hypokinesis--hypergravitation) upon the texture of the vascular bed of various bodily organs. The importance has been shown of preliminary training of animals for the effect of gravitational overloads; the phenomena of readaptation after the action of hypokinesis has been studied; the influence of prior training for overloads has been traced to anatomical changes in the blood vessels of the stomach which appear during the sequential action of a number of extreme factors (gravitational overloads--hypokinesis--gravitational overloads). The work described in the present report is distinct from earlier research in that it concerns preliminary training of 21 rabbits to a gravitational overload, creating critically endurable overloads before and after the animals are under hypokinetic conditions. Training involved rotations with direction of stress head-to-pelvis, chest-to-back, pelvis-to-head; general hypokinesis was for a 4-week period in a special cage. After subjection to gravity stress, the animals went through a sequence of maximal gravity, hypokinesis (4 wk), and, again, the maximal gravity stress, applied in the available directions. Examination of changes in the intestinal vascular bed was then carried out; preliminary training significantly prevented changes in the vascular bed, the most favorable picture being seen when the stress direction was chest-to-back. Figures 4; References: 12 Russian.

USSR

UDC 340.64:611.315

RELIEF CONTOURS OF THE HARD PALATE AS A TEST FOR FORENSIC-STOMATOLOGIC IDENTIFICATION OF PERSONS

Moscow SUDEBNO-MEDITSINSKAYA EKSPERTIZA in Russian No 2, Apr/Jun 77
pp 24-28

SVADKOVSKIY, B. S., and POSEL'SKAYA, V. N., Forensic Medicine Department, Moscow Medical and Stomatological Institute

Abstract The study of individual peculiarities of the folds of the hard palate for purposes of identification has a long history. Nine elements of the hard palate have been distinguished for identification purposes. Methods of mathematical statistics were used to study the frequency with which the individual elements are encountered. The analysis showed that as the number of elements in the relief of the hard palate is increased, the probability of appearance of identical descriptions decreases quite regularly. It thus seems that the nine basic elements distinguished by the authors are sufficient for expert identification studies. It is noted that even after establishment of similarity of the numerical set of descriptions of the relief, the folds of the hard palate may differ in topography of their elements. Further observation should show the extent to which the possibilities of identification of persons on the basis of the relief of the folds of the hard palate can be expanded by studying the topography of its elements. Figure 1; Table 1.

Plant Biochemistry

USSR

UDC 632:635.64(479.25):581.84

EFFECTS OF SEVERAL STRAINS OF TOBACCO MOSAIC VIRUS ON TOMATO LEAF AND STEM STRUCTURE

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 12, 1976 signed to press 28 Jul 76 pp 70-76

GEVORKYAN, Z. G., AZARYAN, K. G., and KARABAKHTSYAN, R. A., Scientific Research Institute of Plant Protection, Ministry of Health Armenian SSR

Abstract Anatomical research of internodes and leaves of the upper parts of tomato plants was done to explain structural changes occurring with the tobacco mosaic virus (TMV). Plant sections were colored with safranine and put in glycerine-gelatin. The most noticeable structural changes occurred with gigantism. A more rapid growth in length was caused by meristem activation. Simultaneously an intensive cambial activity took place which resulted in a significantly wider parenchyma. The development of collenchyma and sclerenchyma tissues was also stimulated. Study of the xylem indicated that stimulated cambial activity was expressed in plant vessel formation of a wider diameter. The threadlike nature of the leaves with the Armenian TMV led to severe deformation of leaves. Figures 5; Tables 2; References: 5 Russian.

USSR

2,4-DICHLOROANISOLE AS A DEFOLIANT FOR FRUIT PLANTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 233, No 2, 1977 pp 509-511

SERGEYEV, L. I., BOKAREV, K. S., RAKITIN, Yu. V., member-corresponding, Academy of Sciences USSR and LUKMANOVA, R. S., Institute of Plant Physiology imeni K. A. Timiryazev, Academy of Sciences USSR, Moscow; Division of Biochemistry and Cytological Chemistry, Bashkirskiy Filial, Academy of Sciences USSR; Institute of Biology, Bashkirskiy Filial, Academy of Sciences USSR, Ufa

Abstract Experiments were conducted on the use of 2,4-dichloroanisole for defoliation of two year old nursery apple trees at the Iglinskoy fruit sovkhoz, Bashkirskaya ASSR, during 1970-71. Trees of (var. Bashkirskiy Beauty) were sprayed with 0.7, 1.0, 1.2, and 1.5% emulsions of 2,4-dichloroanisole, prepared with 1.2% surface-active substance OP-7 as emulsifier. Trees of Antonovka variety were sprayed with 1.2% emulsion of 2,4-dichloroanisole. Defoliating action was compared with the action of 0.4% chlorate of magnesium solution and a control group sprayed with 2% OP-7 solution.

Tests were done three times on 10-30 trees for each variant. Leaf fall with 2,4-dichloroanisole began five days after application. After 12 days fall was 98.5% with 1.5% emulsion compared to 93.2% for chlorate of magnesium. With Antonovka, 81.5% defoliant was achieved 20 days after spraying with 2,4-dichloroanisole, compared to 92.7% for a 0.4% chlorate of magnesium solution--concentrations must be determined separately for each variety. The 2,4-dichloroanisole was superior to chlorate of magnesium in retaining leaf water content. With the former a flow of protein from the leaves into the bark was indicated. The 2,4-dichloroanisole is apparently a highly effective defoliant for nursery apple trees.

USSR

UDC 633.511+584.19

INFLUENCE OF LEVEL OF NUTRIENTS AND INSECTICIDES ON CONTENT OF NUCLEIC ACIDS IN COTTON AND ITS PRODUCTIVITY

Moscow VESTNIK SEL'SKOKHOZYASTVENNOY NAUKI in Russian No 4, 1977 pp 18-23

YAROVENKO, G. I. (deceased), doctor of agricultural sciences; KIR, I. N., candidate of biological sciences, and MANNANOVA, F., All-Union Scientific Research Institute for Cotton Growing

Abstract This study was intended to determine the influence of the simultaneous application of physiologically-active compounds such as insecticides and various levels of mineral fertilizers on nucleic acid metabolism and productivity of Tashkent 1 cotton. The experiment was performed in Wagner vessels filled with typical serozem soil taken from a cotton field at the Central Experimental Station of the Institute. The experiment involved ammonium nitrate, simple superphosphate and potassium chloride plus gamma isomerhexachlorocyclohexane and rogor, in stimulating and suppressing doses. The experiments extended over 3 years. Various combinations had a positive influence on the content of nucleic acids in cotton, on the synthesis and ratio, in the vegetative and reproductive organs, of RNA and DNA. This effect was directly related to the level of mineral nutrition and the dose of the chemical preparations. With elevated levels of mineral nutrition, the synthesis of nucleic acids in the leaves and bolls increased, primarily by increasing the quantity of RNA. The use of the insecticides in stimulating doses further increased nucleic acid synthesis. High doses of insecticides inhibited the process of accumulation of RNA and DNA. Tables 3; References 20: 19 Russian, 1 Western.

Public Health

USSR

PUBLIC HEALTH AND THE MEDICAL INDUSTRY OF THE UKRAINIAN SSR IN THE TENTH FIVE-YEAR PLAN PERIOD

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 3, Mar 77 pp 13-21

MATVEYEV, P., section chief, Gosplan UkrSSR and YENA, M., deputy section chief, Gosplan UkrSSR

Abstract A report is given on the accomplishments of the Ninth Five-Year Plan for the 1971-1975 period, as well as on the accomplishments projected in the Tenth Five-Year Plan for the 1976-1980 period, with respect to the program of public health and the medical industry in the Ukrainian SSR. It is disclosed in the report that by the end of 1975, 117.7 hospital beds were available per 10,000 inhabitants, and that by the end of 1980, 124.5 hospital beds are to be available per 10,000 inhabitants. Whereas no mention is made of environment with respect to the Ninth Five-Year Plan accomplishments, a large program is contemplated for the Tenth Five-Year Plan period.

USSR

UDC 628.314.2:576.858.23

PRESENCE OF ENTEROVIRUSES IN SEWAGE AFTER TREATMENT

Kiev MIKROBIOLOGICHNYY ZHURNAL in Ukrainian Vol 39, No 2, Mar/Apr 77
signed to press 29 Apr 76 pp 228-229

MAKHALOVA, T. S., Zaporozh'ye City Sanitation Station

Abstract Among 486 sewage samples from one large southern city in Ukraine analyzed during 1972-1975, 86 samples (17.6%) contained cytopathogenic enteroviruses. Samples taken after the mechanical and biological treatment of the sewage showed the presence of enteroviruses in 16 out of 68 samples. After chlorination, 13 out of 71 samples contained enteroviruses. The highest percentage (89.8%) of positive identification of enteroviruses was during June-November, with the peak in October. In April and May enteroviruses were found only in few sewage samples.

USSR

UDC 616-082.3+614.8

ANALYSIS OF THE CAUSES OF REPEATED CALLS FOR AMBULANCE TEAMS

Kiev VRACHEBNOYE DELO in Russian No 4, Apr 77 pp 147-150

GUK, P. I., candidate of medical sciences, SHUSTER, L. A., candidate of medical sciences, GOLIKOV, A. A., VOLYAKOV, I. I. and YAVORSKIY, A. V., L'vov City Health Department, L'vov City First Aid Hospital

Abstract Ambulance teams each day make repeated trips to render first aid to the same patients. Some reports indicate that up to 10% or more of first aid calls are repeated to the same patient in the same day. The main reason for this is the need to utilize diagnostic and therapeutic hardware. In Leningrad, ambulance teams make 15% of their calls to patients who have been serviced by first aid teams. This article presents a statistical study of 47,809 calls made in L'vov between May and July of 1975. The data indicate that: $29.9 \pm 1.8\%$ of the repeated calls were for the services of specialized teams of physicians needed for consultation, for special equipment or for more experienced specialists. Almost 1/3 of the repeat calls resulted from errors in diagnosis or insufficient effectiveness of treatment performed. One fourth of the repeated calls resulted from recurrences of chronic disease, difficult or even impossible to treat at home, refusal of the patient to be hospitalized or taken to the area doctor. Table 1.

Radiobiology

USSR

UDC 539.16.047

MODIFICATION OF BIOCHEMICAL EFFECTS OF RADIATION UNDER HYPERTHERMIC CONDITIONS

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA No 3 BIOLOGIYA in Russian,
No 1, Feb 77 signed to press 15 Feb 76 pp 81-86

MATYUSHICHEV, V. B., TARATUKHIN, V. R., and SHAMRATOVA, V. G.

Abstract The authors point out that temperature levels during radiation affect the course of radiation disease. The consequences of combined radiation-and-thermal loads have not received adequate study in view of the fact that the situation frequently arises when people are subjected to ionizing radiation in an environment of high temperatures. Hence, the authors have designed an experiment to examine changes in the activity of several enzyme systems following X-ray, beta, and combined, radiation of a body which is under heat stress. Sexually-mature, male white rats (non-standard strain) were subjected to total body X-ray irradiation (25, 50, 100, 250 and 400 R) and beta radiation from K^{85} (2.5, 3.05, 4.45, 7.4 krad), separately and in combined application, under normal and hyperthermic conditions. In the case of the combined loads, the beta radiation was carried out in a heat chamber (4 hr, 36°, relative humidity of air 80-90%), while the X-ray radiation was applied outside the chamber at the end of the period of exposition. Five, 12, 19, and 26 days after the action, the authors measured the ATP and creatinekinase activities of aqueous extracts of the large hemispheres of the brain, the liver, and the skin, and, also, the peroxidase activity of the blood system. Reliable effects were found in all of the test-systems employed. Tissue, enzyme, and radiation specificity was established for the post-exposition changes. But, interpretation of results proved to be difficult: depending on actual conditions of the radiation, and of the analysis, the heat stress could exacerbate, moderate, or even not affect at all, the sequelae of the radiation damage. The authors suggest that other factors, e.g., threshold dose levels may be involved.

Therapy

USSR

UDC 617-001.17-06:616-001.36)-085.384-07:616.12-008.3-072.7

SIGNIFICANCE OF SOME HEMODYNAMIC INDICES IN THE ASSESSMENT OF THE EFFECTIVENESS OF TRANSFUSION THERAPY FOR BURN SHOCK

Moscow PROBLEMY GEMATOLOGII I PERELIVANIYA KROVI in Russian Vol 22, No 3, Mar 77 signed to press 9 Jul 76 pp 34-36

MAKSIMOV, P. I. and MURAZYAN, R. I., doctor of medical sciences, Second Surgical Section of the Central Institute of Hematology and Blood Transfusion, Ministry of Health USSR, Moscow

Abstract The authors have encountered 88 patients with burns over 20-90% of the body surface. Forty displayed burns of the upper respiratory tract. The area of deep burns in 48 involved 10-50% of the body surface. Liquids used in therapy included polyglukin and reopolyglukin, protein, laktasol, 5-10% glucose solution, and Ringer's solution. In burns of up to 50% of the surface they have administered up to 3 liters of liquid intravenously on the first day, and 1.5-2 liters on the second and third day. When only electrolyte-salt solutions were used the daily administration was 1-2 liters. In treatment of burn patients with over 50% body surface involvement the daily administration was 6 liters on the first day and 3-4 liters on the second and third day. The treatment was evaluated on the basis of readings of the total volume and components of circulating blood, arterial pressure, central venous pressure, pulse, hematocrit, hemoglobin level, number of peripheral blood erythrocytes, blood viscosity, linear rate of blood flow, and kidney excretion of urea. Findings indicated that the status of these indices in the burn shock period permitted realization of timely correction of the liquid therapy in order to sustain the hemodynamic indices at a satisfactory level. Confirmation was found of the necessity for dynamic monitoring of the level of the circulating volume and components of the blood, the central venous pressure, and hourly diuresis. References: 1 Western.

USSR

UDC 617.735-007.281-089:617.715-089.844

SCLEROPLASTIC OPERATIONS USING SILICONE RUBBER WITH SEVERE FORMS OF RETINAL DETACHMENT

Moscow VESTNIK OFTALMOLOGII in Russian No 2, 1977 signed to press 10 Aug 76 pp 27-31

PIVOVAROV, N. N., Candidate of Medical Sciences, and BAGDASAROVA, T. A., All-Union Scientific Research Institute for Diseases of the Eye, USSR Public Health Ministry

Abstract This article presents an analysis of the results of the use of silicone rubber and foreign and domestic models of suture materials during

150 operations for retinal detachment, including determination of advantages and indications of its use. Between 1970 and 1975, silicone rubber and synthetic suture materials were used in surgical treatment of 150 patients with category II-III retinal detachment according to the classification of Professor M. M. Krasnov. Most of the patients were over 45 years of age, 57 had been operated on one or more times in other clinics previously. The standard method was used. The silicone rubber used was of several types: 1) produced by MIRA (USA); 2) produced by "Labtician" (USA); and 3) domestic silicone rubber based on type SKTV elastomer. Full or partial reattachment was achieved in 125 of the 150 patients, observation time from 3 months to 5 years. Functional results were not quite as good as anatomical results. The results can be considered quite satisfactory, considering the severity of the cases involved. The most effective surgical procedure was intrascleral sealing by means of silicone rubber with graded circumclusion using a band of silicone rubber. The best of the synthetic suture materials was the Hungarian Supramide 4-0 Medicor. The domestic silicone rubber was equal in elasticity and tolerance to the foreign specimens. Table 1; References 7: 3 Russian, 4 Western.

USSR

UDC: 616.1-089:061.3/47+57)"1975"

ALL-UNION CONFERENCE OF CARDIOVASCULAR SURGEONS

Moscow KHIRURGIYA in Russian No 3, Mar 77 pp 150-153

BOKERIYA, L. A. and BLYUMBERG, A. ZH, Moscow

Abstract The first All-Union Conference of Cardiovascular Surgeons was held 25-26 June 1975 in Moscow, and featured discussions of the most important problems of modern cardiovascular surgery. The plenary session of the conference was dedicated to the problem of acute circulatory disorders during open-heart surgery. Titles of reports heard at this session included: Pathogenesis of Acute Circulatory Disorders During Open-Heart Surgery Using Artificial Circulation; Pathogenesis of Hemorrhagic Shock; Acute Circulatory Disorders in the Structure of Post-Operative Mortality in Open-Heart Surgery; and, Basic Principles of Prophylaxis and Treatment of Cardiac Insufficiency in Cases of Open-Heart Surgery with Artificial Circulation. Problems discussed at meetings of the individual sections of the conference included: Congenital Aortal Heart Defects; Surgery for Acquired Aortal Valve Defects; Chronic Occlusion of the Lower Segment of the Ventral Aorta and Iliac Arteries; Experimental Studies on the Influence of Artificial Circulation on the Organism; New Types of Heart Surgery; and Problems of Improvement of Existing and New Methods of Protection of the Body during Open-Heart Surgery. The first All-Union Conference of Cardiovascular Surgeons adopted the following recommendations for cardiac

surgical centers of the country: increase research on the pathogenesis of circulatory insufficiency during and after open-heart surgery; further develop the principles of adequacy of perfusion, profusion without the use of donor blood; continue development of problems of anesthesia during operations with artificial circulation to prevent pathologic reactions of the organism to perfusion; in cases of moderate aortal insufficiency combined with other congenital heart defects, the operation of choice is repair of the aortal valve, with prostheses being recommended only for extreme cases of insufficiency; acute rupture of an aneurism in the sinus of valsalva requires immediate surgical treatment; surgical treatment of aortal stenosis in children is indicated with a clinical picture of the defect and a pressure gradient of at least 50 mm Hg; practice, based on the study of long-term results, has shown that closed aortal comissurotomy is not advisable with congenital aortal stenoses; open aortal valvuloplasty can be used only in limited cases with definite indications; prosthesis of the aortal valve using domestic prostheses is highly effective; it is desirable to develop a single classification of congenital aortal defects; surgical treatment of acquired aortal valve defects should be more widely used; experience in the surgical treatment of chronical occlusion disease of the lower segment of the ventral aorta and iliac arteries has been found to be highly effective: the conference recommends contrast study of the vessels involved in order to determine the possibility of reconstructive surgery or to answer the question of the level of amputation; thrombosis of the aortal-femoral prosthesis is an indication for repeated reconstruction surgery in such cases.

USSR

MINUTES OF THE 2029th SESSION OF THE SURGICAL SOCIETY OF MOSCOW AND MOSCOW OBLAST, 2 Sep 76

Moscow KHIRURGIYA in Russian No 3, Mar 77 pp 153-155

KUZIN, M. I., professor, chairman, and DUMCHEV, V. A., candidate of medical sciences, Reviewer

Abstract A case history is given of a patient, 39 years of age, radiographically shown to have a retention cyst in a circular pancreas. The anterior semicircle of the cyst was resectioned, the duct found in the cyst was drained externally, the posterior portion of the cyst was marsupialized. It was found later that the cyst was formed as a result of obturation of the duct draining pancreatic juice from the ventral segment of the circular portion of the pancreas into its main duct. After 40 days, a second operation was performed including demarsupialization of the remaining portion of the cyst. Comments of others present at the meeting indicated a generally unfavorable attitude toward marsupialization in such cases, most members

preferring a single operation. The chairman of the Society concluded that the cyst was probably actually a pseudocyst, since no epithelium was found.

A report was also presented on observation of 379 patients with nonspecific thoracic empyema. An increase was noted in the number of patients, most of whom were referred from treatment hospitals, frequently rather late in the course. 88.2% of cases involved complication of acute and chronic purulent diseases of the lungs. Treatment of empyema is based on the correction of three factors: suppuration, resorption, and fluid loss. Comments following the report indicate general agreement of the members of the Society that the incidence of empyema is on the rise.

Publications

USSR

PROBLEMS OF PUBLIC-HEALTH ECONOMICS

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 3, Mar 77 pp 95-96

KOZAK, V., professor, doctor of economic sciences, and NOVIKOV, V., candidate of economic sciences Reviewers

Review of book "Ekonomika Bol'nits" (The Economics of Hospitals) by M. I. Malamud, Kiev, "Zdorov'ya," 1976, 100 pp

Abstract According to the reviewers, a definite contribution to the current discussion of the economic questions of medical service is made by this monograph; the book consists of four chapters: the economics of public health and the economics of hospitals, planning the activity of a hospital and a polyclinic, planning labor and wages, analysis of the activity of a hospital. The subject is treated from the viewpoint of theory as well as that of practice. Attention is drawn to the analysis of the efficiency of public health and to the efficient utilization of public-health facilities.

CSO: 1840

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